SERIES 3 CONTROLLER

Operations Manual

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ABOUT THIS MANUAL

This manual is designed to provide you with information about your Vision Series 3 Controller. This manual does not attempt to teach you how to engrave or rout, how to use a computer or how to use your engraving or signmaking software. While it does discuss the Vision and Vision PRO software, any information beyond that will be found in their respective manuals. Some previous knowledge of engraving terms and the sign making or engraving process is assumed. For information on your individual computer system see your computer's users manual or contact your computer distributor. For information regarding the specific software that drives your engraving/routing system, see the manual for the individual software package you are using.

SAFETY

Caution:

To reduce the risk of electric shock, do not remove the top cover with the power cord plugged in.

There are no user serviceable parts inside the controller. Please contact qualified service personnel for service issues.

*Note: The Vision Controller has externally replaceable fuses. If you need to replace a fuse, refer to the maintenance section of this manual.

Safety Tips:

1. To avoid electric shock or equipment damage, ensure that the control unit is connected to the appropriate electrical source as noted in the installation procedures.

2. Never operate the equipment with damaged or frayed power cords, loose connections, or exposed extension cords where someone will walk on the cord and create a tripping hazard.

3. Make sure to hold the plug, not the cord, when disconnecting the controller from an electrical socket or power source.

4. Openings are provided in the case for ventilation. Do not cover the openings or place the controller in an environment where the openings may become blocked.

5. Never insert anything into the ventilation openings. Doing so may create a danger of electric shock.

6. Place the controller in a location with low humidity and a minimum of dust. Follow the maintenance instructions for proper cleaning of the controller air filter.

7. Do not expose the control unit to rain or use it near water. You can clean the controller with a damp cloth but be sure to unplug the unit first.

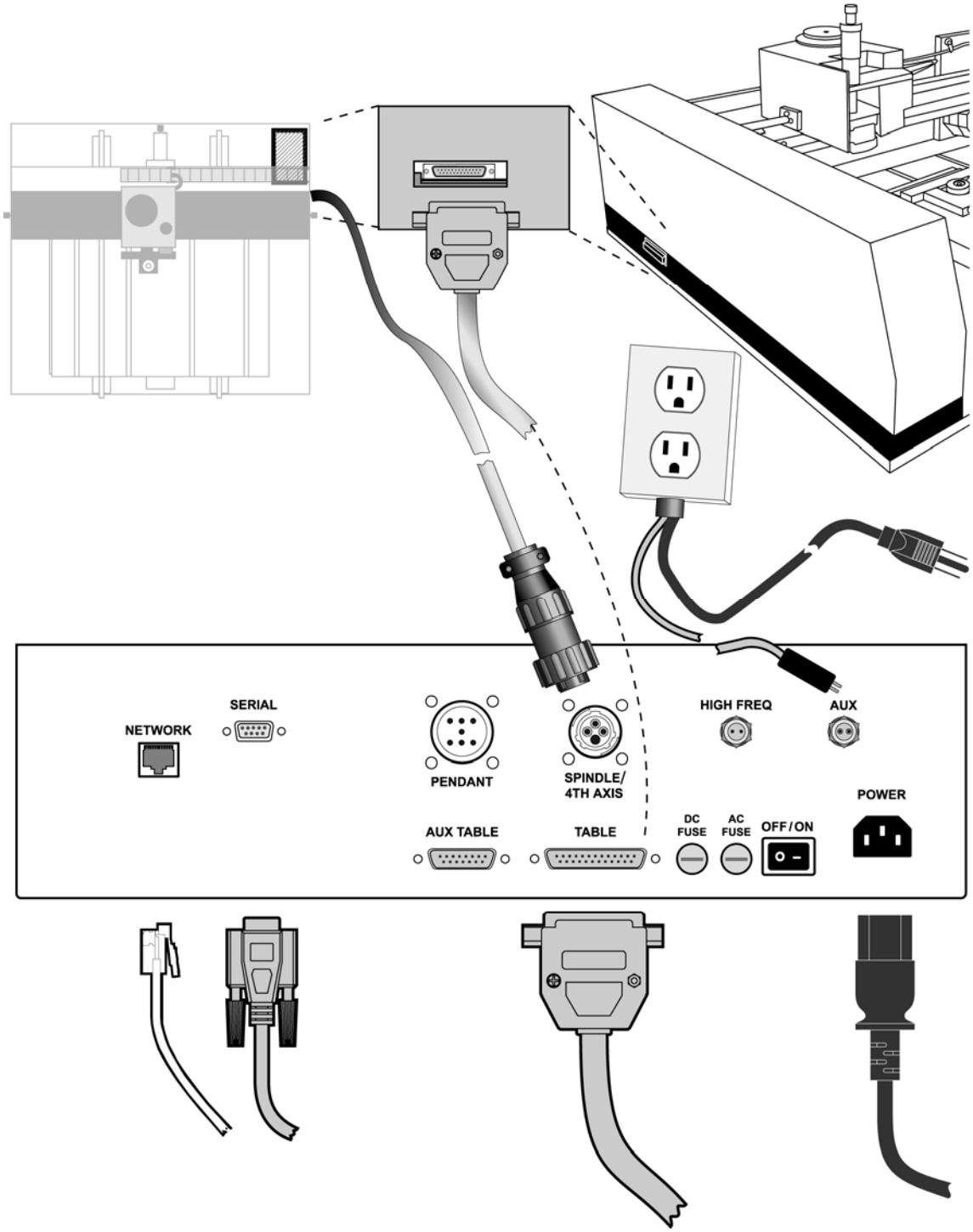
8. If your control unit does not operate properly; in particular, if there are any unusual sounds or smells coming from it, immediately unplug it and contact a Vision service technician or your local Vision distributor.

9. Unplug the controller when it is going to be left unused for an extended period of time.

10. Before any servicing, disconnect the power cord.

SETUP

Cabling the Vision Controller



1. Connect the supplied network cable to the plug marked 'NETWORK' on the back of the Vision controller. Please see the next section in this manual labeled 'Cabling to your PC' for information on how to connect the other end of this cable to your PC.
2. Connect the 25-pin engraving table cable to the plug marked 'TABLE'. Plug the other end of this cable into your engraving table.
3. Connect the cable with the round plug from the engraving table to the port marked 'SPINDLE' (**NOTE:** This cable/plug is not included with the Phoenix Engraver or the MAX Engraver).
4. Connect the thin gray auxiliary plug (extending from the auxiliary power box) to the port marked 'AUX'. (**NOTE:** This is an optional auxiliary power box used only with a vacuum chip removal system. If a vacuum chip removal system is not required, there is no need for the auxiliary power box).
5. Connect the black power plug (extending from the auxiliary power box to your wall outlet.
6. Connect the power cord from your accessory item (such as a vacuum system) to one of the two plugs in your auxiliary power box.
7. If you purchased the optional hand held pendant, connect the round connector from the Pendant to port marked 'PENDANT'.
8. Connect the power cord from the 110v power source to the 3-prong connection to the right of the ON/OFF switch. Note: If your system is configured for 220 volts, a yellow 220 volt label will be affixed to the back of your controller. See figure below to switch voltages. If there is not a 220 volt label on the back of your controller, do NOT plug 220 volt power into the machine as this will cause serious damage.
9. For systems that include a high frequency spindle motor, plug the cable from the high frequency spindle box into the port marked 'High Freq'.
10. The 'Aux Table' plug is used only for specialty tables such as dual headed machines.
11. The 'Serial' plug is used only in the event that no network connection is available to use the engraver with. In this case, use a 9 pin female to 9 pin female null modem cable to connect from the Vision controller to your computers serial port. **Note:** This is only used if you are not using the network connection on the Vision controller.

NOTE: Make sure you turn the power switch on before you attempt to run your engraver.

Cabling to your PC

USING A NETWORK CONNECTION

There are two different types of network connection methods that can be used for the Vision controller. Connect the supplied network cable to the plug marked 'NETWORK' on the back of the Vision controller. The other end of the network cable connects in one of two ways.

Connection through a network:

If you are connecting the Vision controller to a **NETWORK SERVER**, plug the network cable directly from the Vision controller into a network port. When the controller is turned on, it will automatically receive an IP address from the network server it is connected to.

Direct connection to the PC

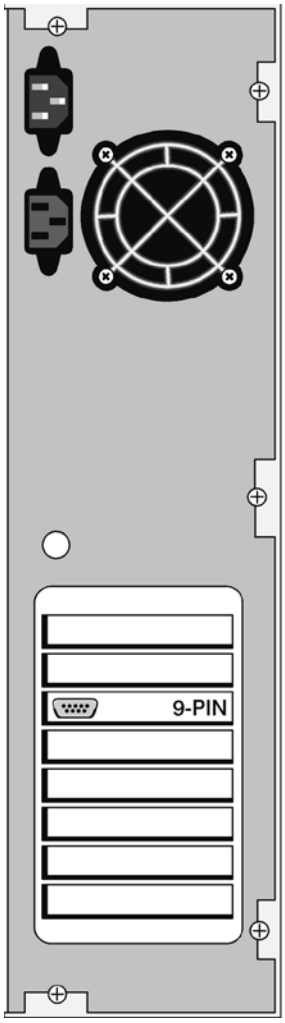
If you are connecting the Vision controller **DIRECTLY TO A PC** and not through a network server, please attach the supplied network crossover adaptor to the end of the network cable. Then plug the adaptor directly into the network connection in the back of your PC. The IP address will need to be manually entered into the Vision controller. To do this, follow the steps below:

1. Turn the Vision controller on. After a few seconds, the controller will boot up.
2. Press the Menu button on the front panel.
3. Press the Z down jog button two times to scroll by page.
4. The cursor will be on Ethernet Settings. Press the Enter button on the controller.
5. The cursor will be on Specify IP. Press the Enter button on the controller.
6. Press the EXIT button on the controller to specify an IP address.
7. Using the number pad on the Vision controller, type 192 and press Enter
8. Type 168 and then Enter.
9. Type 5 and then Enter.
10. Type 101 and then Enter.
11. The Enter NetMask screen will show on the LCD screen. Type 255 and then Enter.
12. Type 255 and then Enter.
13. Type 255 and then Enter.

14. Type 0 and then Enter.
15. Press the Exit button on the controller two times. The IP address is now set in the Vision controller.

USING A SERIAL CONNECTION

If you cannot connect the Vision controller to the PC through a network connection, you can use a serial connection. Connect the 9 pin female to 9 pin female null modem cable from the Vision controller to your computers serial port shown in the picture below.

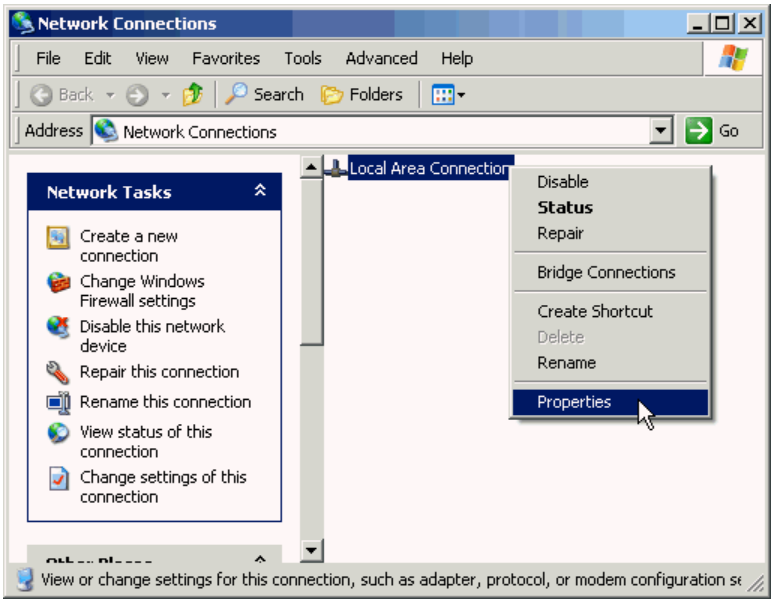


CONFIGURING THE PC

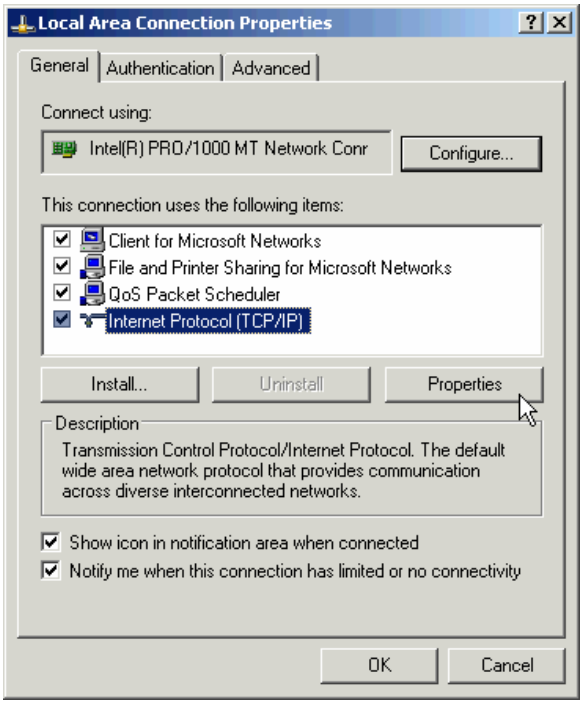
When using a network connection through a network server, there is no configuration required with the PC so you can skip this section. If you are connecting the Vision controller directly to the PC using a network connection, you must configure the Windows© network settings. The settings are different depending on which version of the Windows© operating system you are using. Please follow the instructions below for the correct version of Windows© is on your PC.

Windows XP:

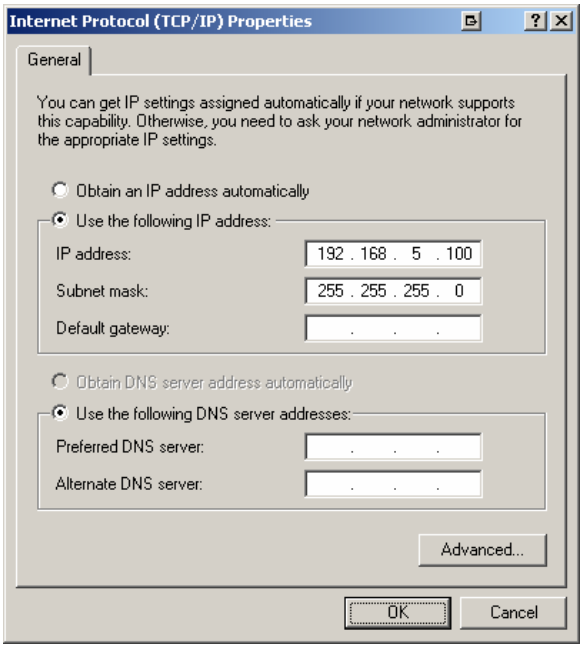
1. If there is a My Network Places icon on your main Windows© screen, go to step 3 below.
2. If there is no My Network Places icon on your main Windows© screen, click on the Start button at the lower left corner of the Windows screen.
3. Right click on My Network Places and go to Properties.
4. Right mouse click on the Network Connection in the right side and select Properties.



5. Highlight the Internet Protocol (TCP/IP) and click on Properties.



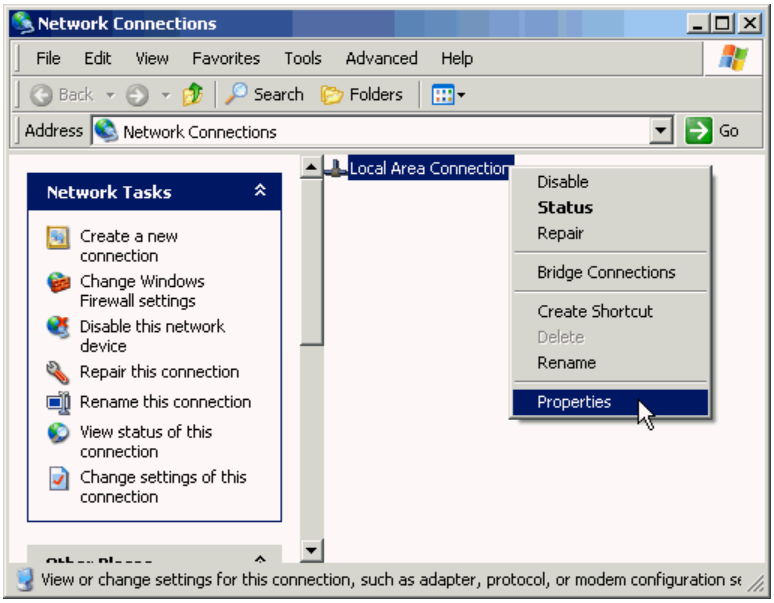
6. Select “Use the following IP address:”. Enter the numbers shown below for the IP address and Subnet mask.



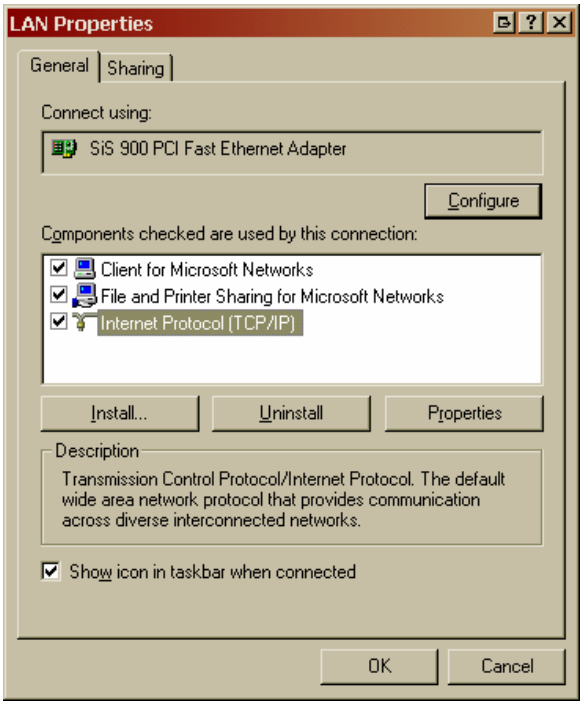
7. Click OK and the click Close.

Windows 2000:

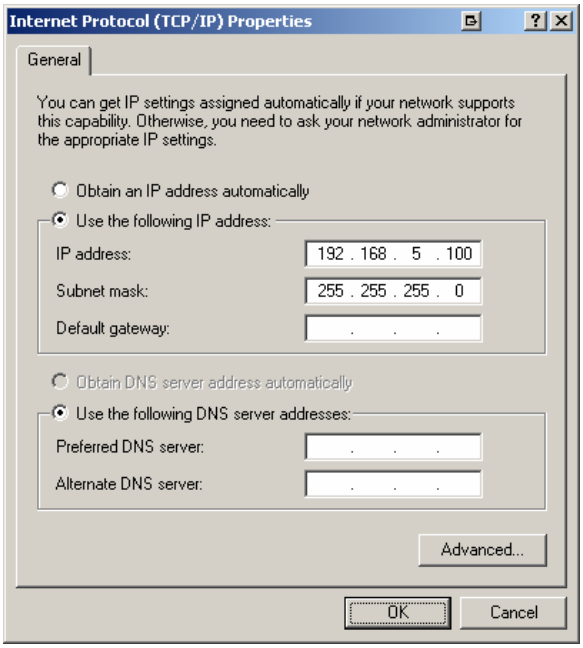
1. Right click on My Network Places from the Windows© desktop and go to Properties.
2. Right mouse click on the Network Connection in the right side and select Properties.



3. Highlight the Internet Protocol (TCP/IP) and click on Properties.



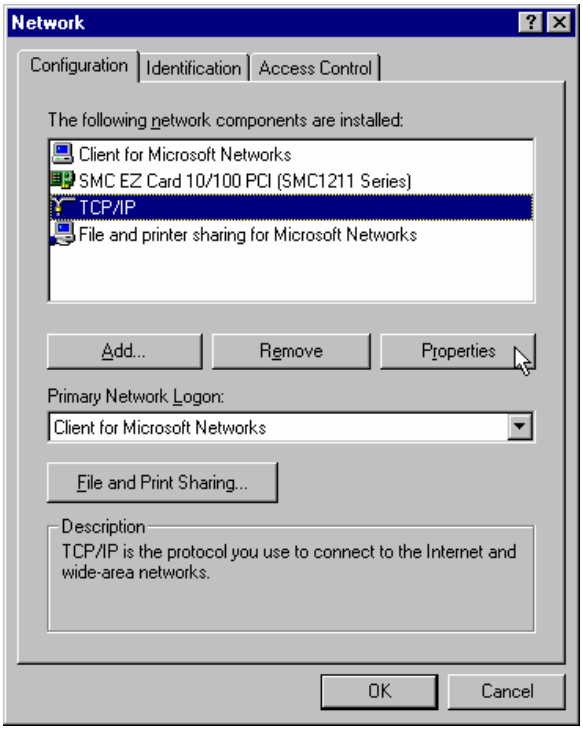
4. Select “Use the following IP address:”. Enter the numbers shown below for the IP address and Subnet mask.



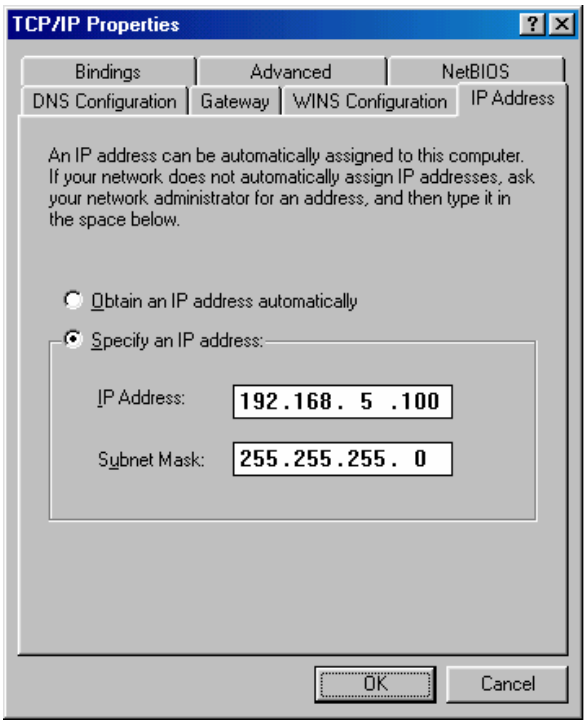
5. Click OK and the click Close.

Windows 98, ME or NT:

1. Right click on Network Neighborhood and go to Properties.
2. Highlight TCP/IP and click on Properties.



3. Click on the IP Address tab.



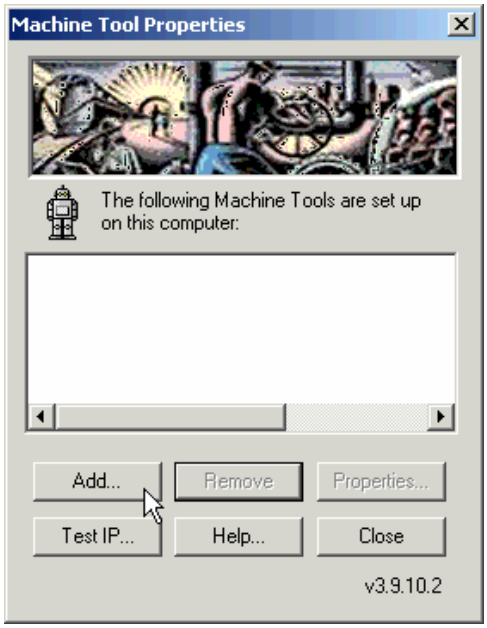
4. Select “Specify an IP address”. Enter the numbers shown above for the IP address and Subnet mask.
5. Click OK.

Configuring Job Server for different Windows login usernames

If different Windows login users will be using the Job Server, the Job Server will need to be configured one time for each new user. The steps are outlined below.

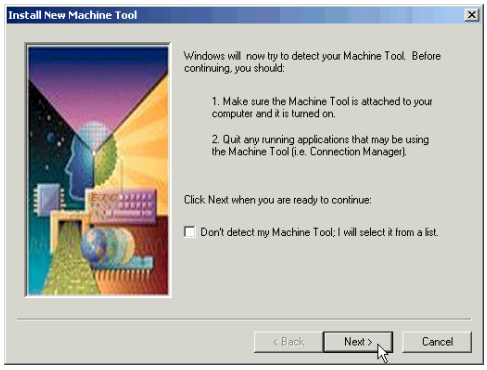
Login to Windows as the different user name.

Go to Start Programs, Vision Machine Tools, Machine Connections.

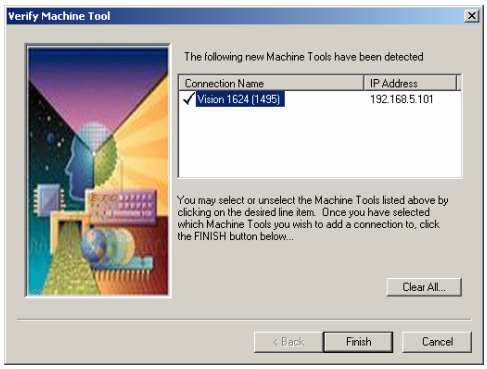


Select Add.

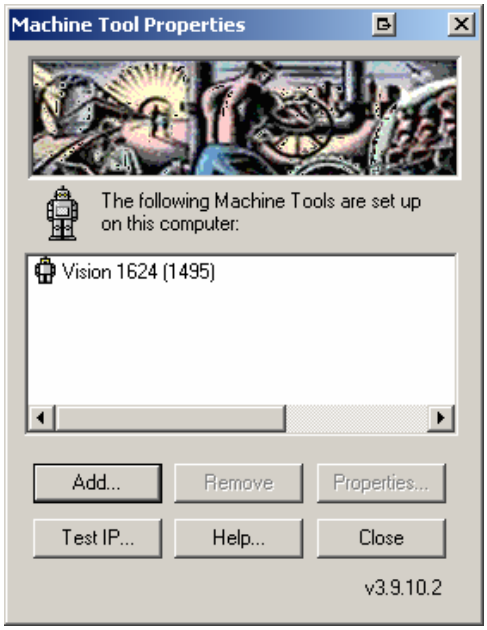
NOTE: When using Windows XP with service pack 2, the following message will appear the first time that a machine is added. Select "Unblock" to continue.



If the Vision controller is connected with the network cable, click on Next. If it is connected through a serial cable, skip to step 8.

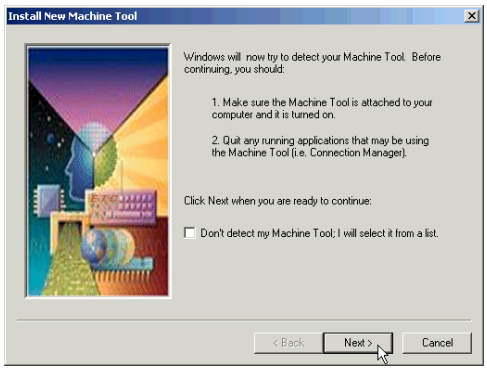


The Vision controller should be detected through the network connection and shown in the Connection Name above. If you have multiple Vision systems connected on your network or PC, multiple machines will be shown in the screen below. You can have an unlimited amount of machines connected to one PC. Click Finish.

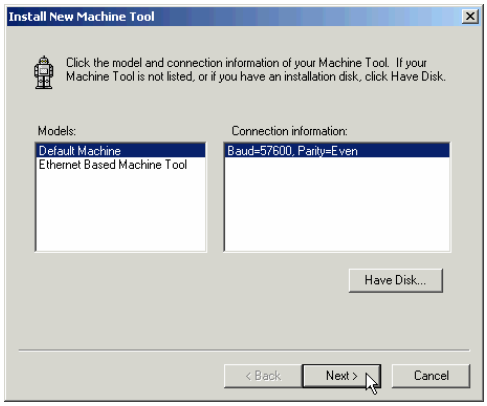


Select Close.

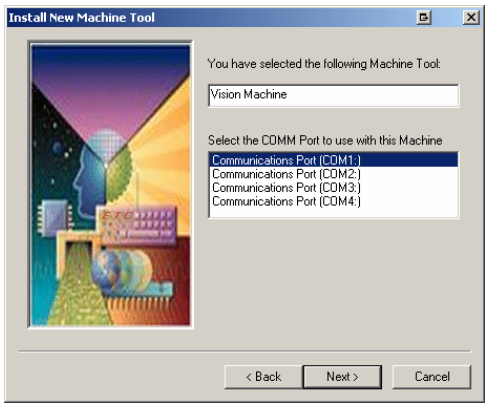
If the Vision controller is connected to a serial port instead of a network, continue here.



Select “Don’t detect my Machine Tool; I will select it from a list” and click Next.



Select Default Machine and click Next.



Enter a name for your Vision machine and select the Communications Port that the machine is connected to. Click Next.

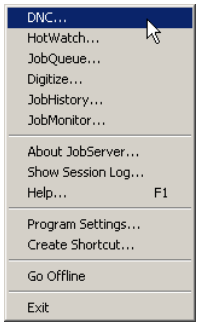
Click Finish.

Select Close.

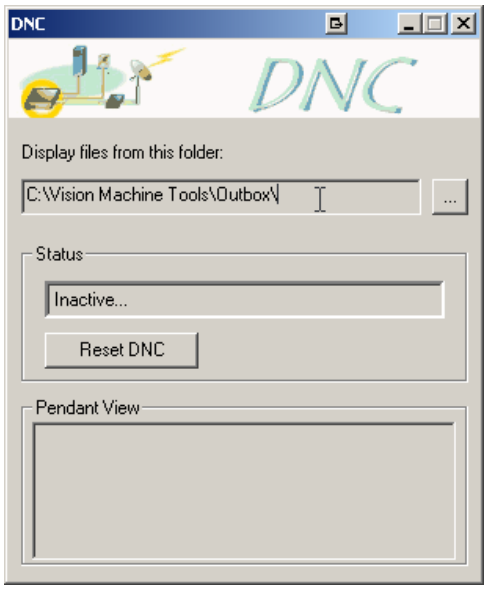
Go to Start, Programs, Vision Machine Tools, Job Server.

Right mouse click on the Job Server icon located in the lower left corner of the screen.

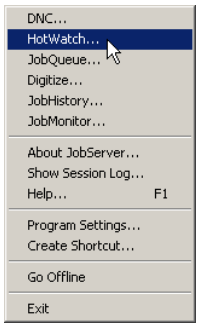
Left mouse click on DNC.



In the DNC Window, change the "Display files from this folder:" by clicking the three dots to the right. Select the C:\Vision Machine Tools\Outbox\ folder per the picture below. Click the X in the upper right corner of the DNC screen to close it.

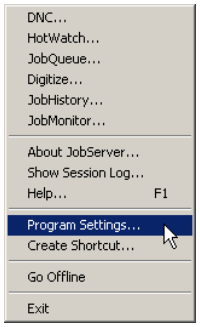


Right mouse click on the Job Server icon in the lower right corner of the screen and left click HotWatch.

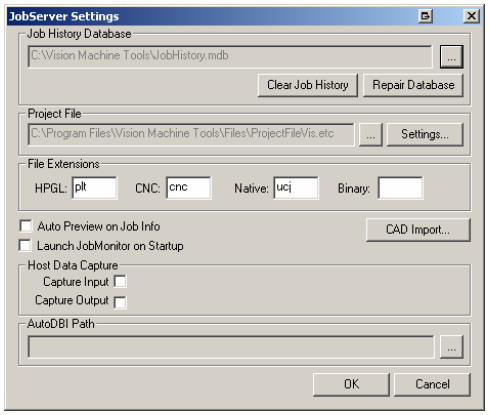


In the HotWatch Window, change the “Inbox” by clicking the three dots to the right. Select the C:\Vision Machine Tools\Inbox\ folder per the picture below. Change the “Outbox” by clicking the three dots to the right. Select the C:\Vision Machine Tools\Outbox\ folder. Change the “Refresh Interval” to 4 seconds and put a check mark next to “Activate HotWatch on startup of JobServer”. Click the X in the upper right corner of the HotWatch screen to close it.

Right mouse click on the Job Server icon in the lower right corner of the screen and left click Program Settings.



Change the "Job History Database" by clicking the three dots to the right. Select the file called C:\Vision Machine Tools\JobHistory.mdb per the picture below. Change the "Project File" by clicking the three dots to the right. Select the file called C:\Program Files\Vision Machine Tools\Files\ProjectFileVis.etc. Add plt to the HPGL File Extension box. Add cnc to the CNC File Extension box.



Click OK.

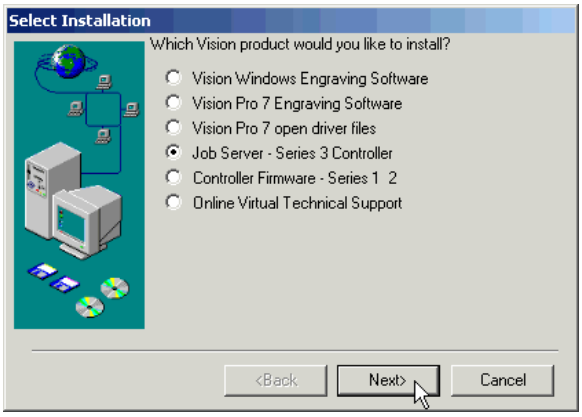
Reboot the PC. The Job Server is now configured for the new Windows user.

JOB SERVER SETUP

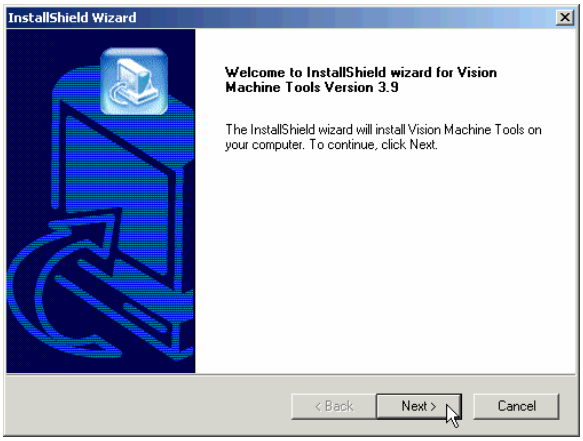
Installing the Vision Job Server program

The job server program is required to run jobs with the Vision controller. To install the job server program, follow the steps below. **IMPORTANT:** You must have administrative privileges on the PC that you are installing the Vision Job Server program on. If not, the program will not install properly.

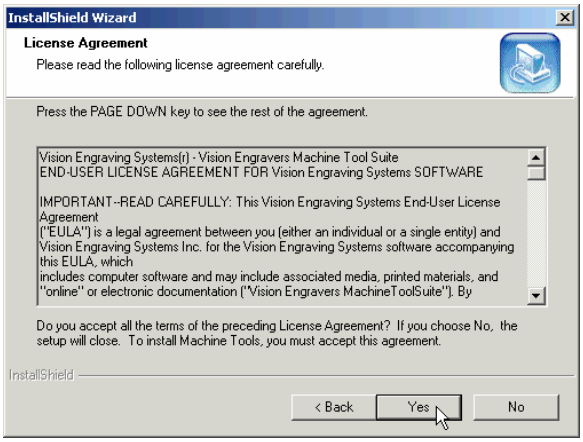
1. Insert the Vision All Products CD into the PC.
2. The following screen should appear. If not, click on Start, Run and then type in **d:\ SetupV7.exe** where d:\ is the letter of the CDROM drive that the Vision All Products CD is in.



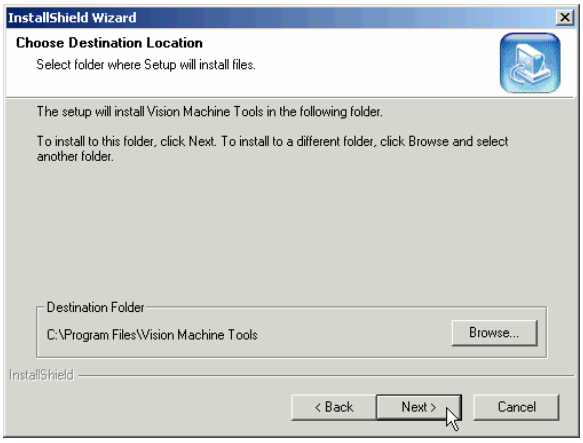
3. Select Job Server – Series 3 Controller and click Next.



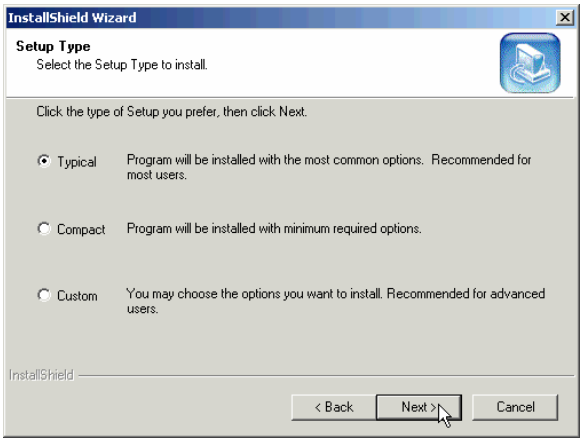
4. Click Next.



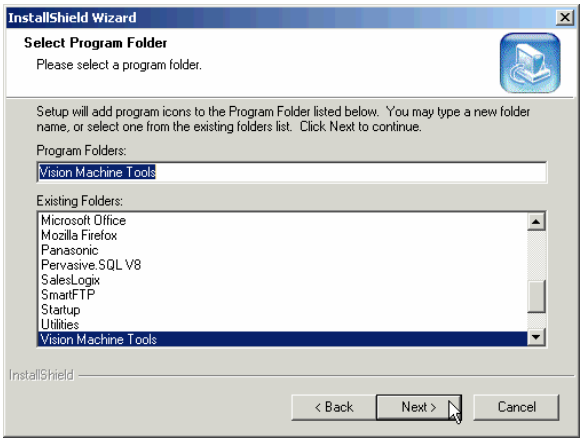
5. You must agree with the license agreement to continue. Click Yes.



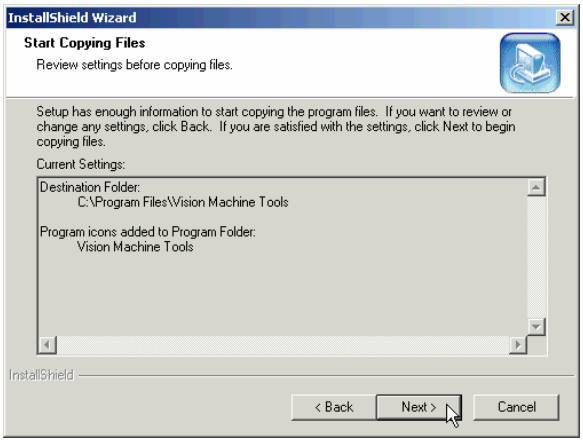
6. Select the installation folder or leave the default and click Next.



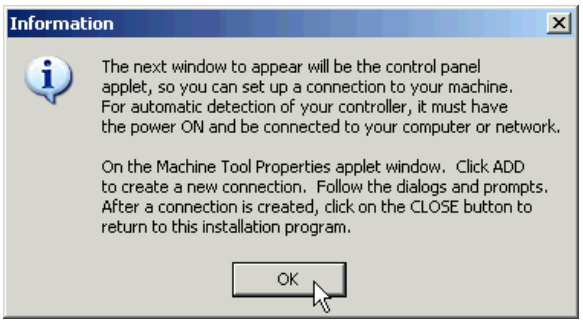
7. Select the installation type and click Next.



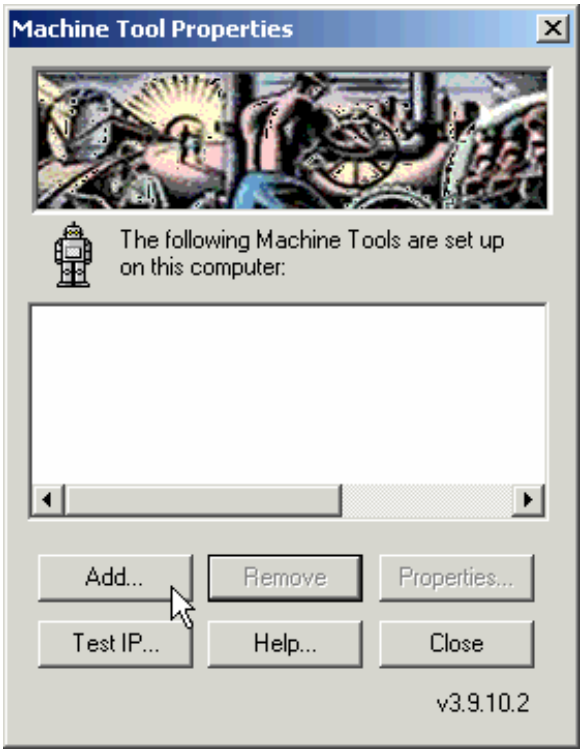
8. Select the program group name and click Next.



9. Click Next to continue.

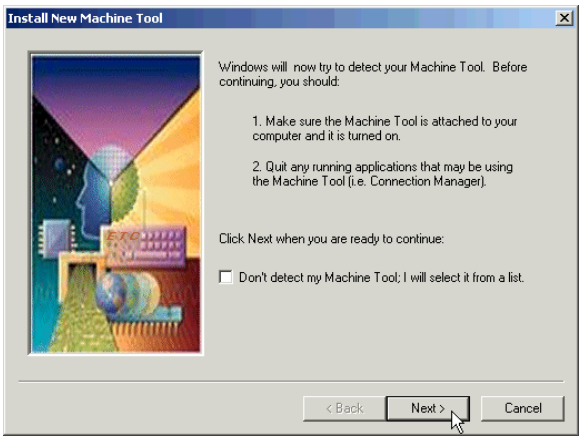


10. Once the screen above appears, make sure that the Vision controller is connected to the network or serial cable and that the machine is powered on. Click OK.

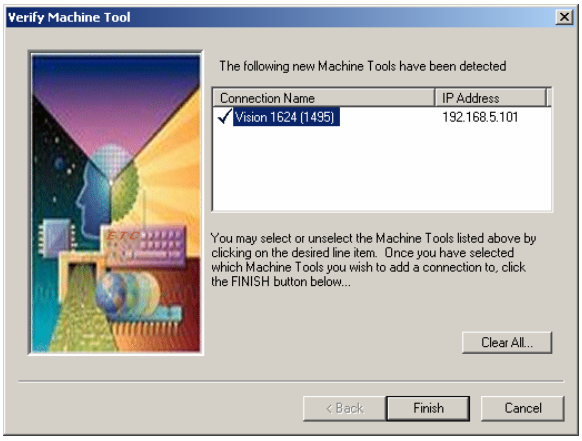


11. Select Add.

NOTE: When using Windows XP with service pack 2, the following message will appear the first time that a machine is added. Select "Unblock" to continue.

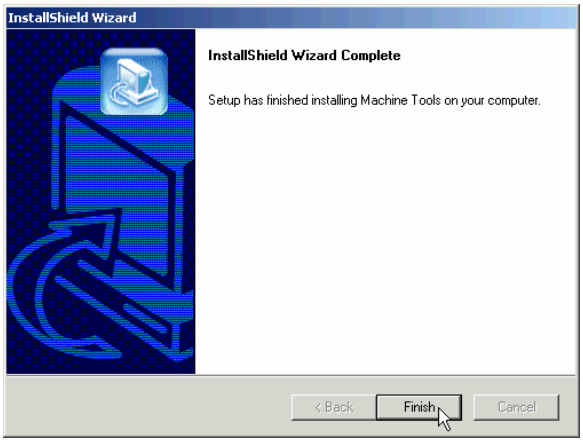


12. If the Vision controller is connected with the network cable, click on Next. If it is connected through a serial cable, skip to step 18.

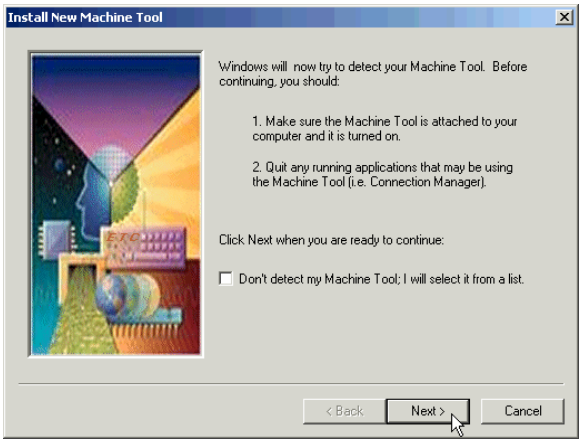


13. The Vision controller should be detected through the network connection and shown in the Connection Name above. If you have multiple Vision systems connected on your network or PC, multiple machines will be shown in the screen below. You can have an unlimited amount of machines connected to one PC. Click Finish.

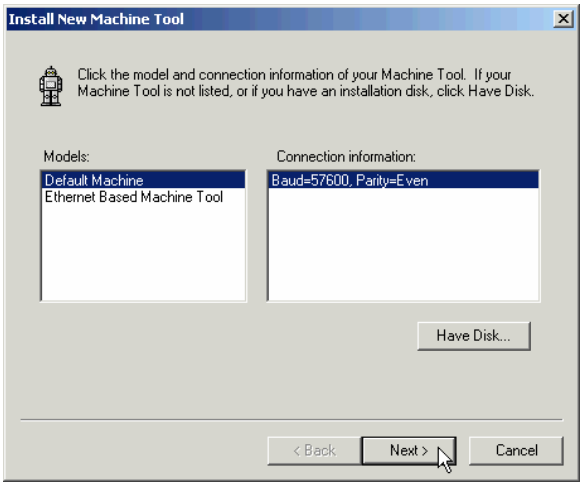
14. Select Close.



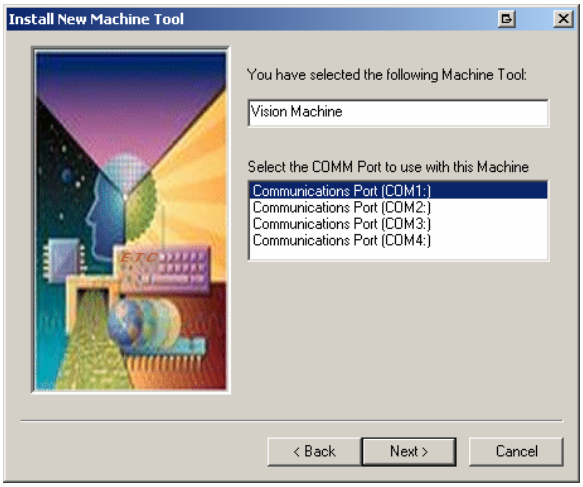
15. Select Finish.
16. Click OK. The Job Server Program is now installed. Please skip items 17 through 22 and proceed to the next section in this manual.
17. If the Vision controller is connected to a serial port instead of a network, continue here.



18. Select "Don't detect my Machine Tool; I will select it from a list" and click Next.

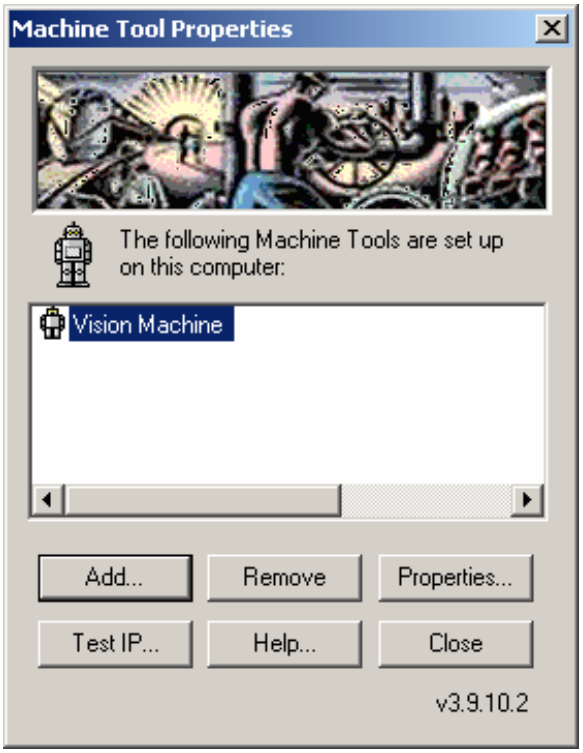


19. Select Default Machine and click Next.

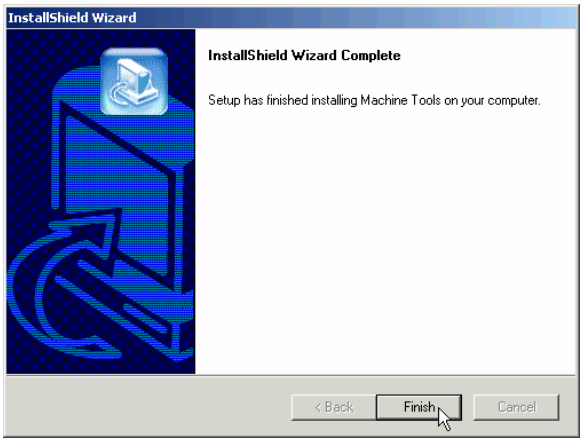


20. Enter a name for your Vision machine and select the Communications Port that the machine is connected to. Click Next.

21. Click Finish.



22. Select Close.



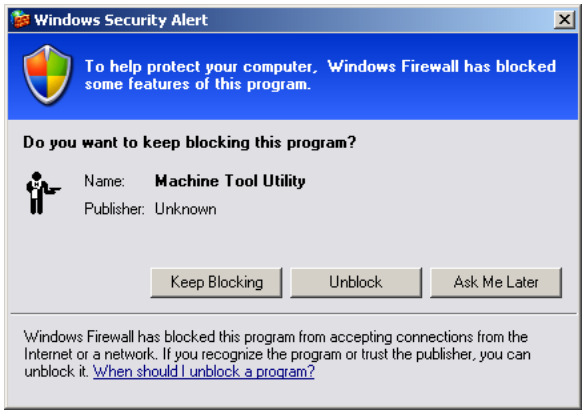
23. Select Finish. The Job Server Program is now installed.

Starting the Vision Job Server program

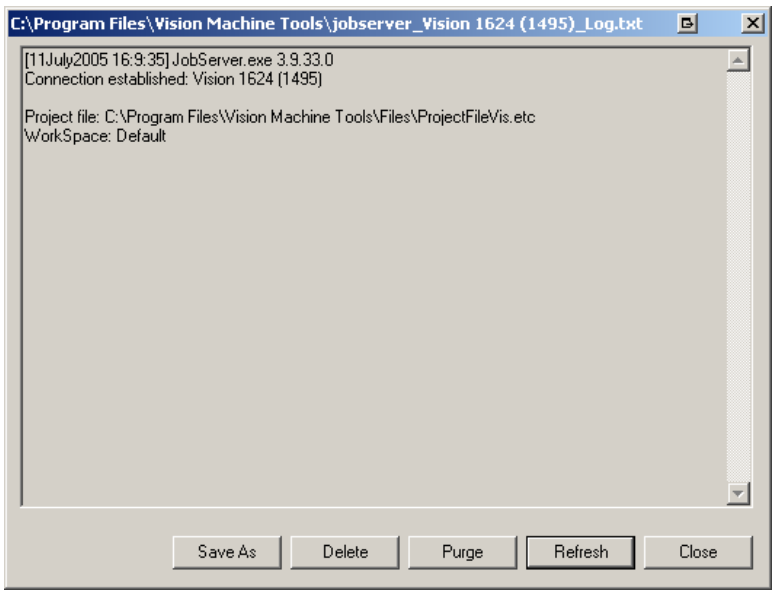
The Job Server program must be started in order to send jobs to the Vision machine to engrave or rout.

To start the Job Server, go to the Start, Programs, Vision Machine Tools menu and select Job Server.

> **NOTE:** When using Windows XP with service pack 2, the following message will appear the first time that the Job Server is started. Select "Unblock" to continue.



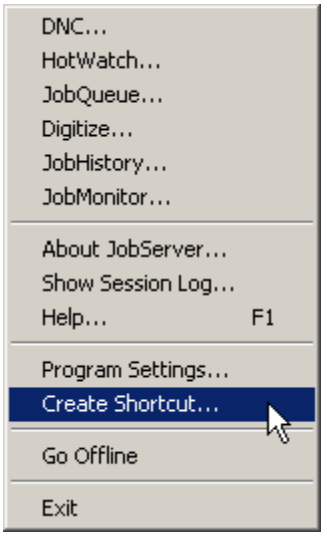
The following screen will appear for a short period and then it will go away.



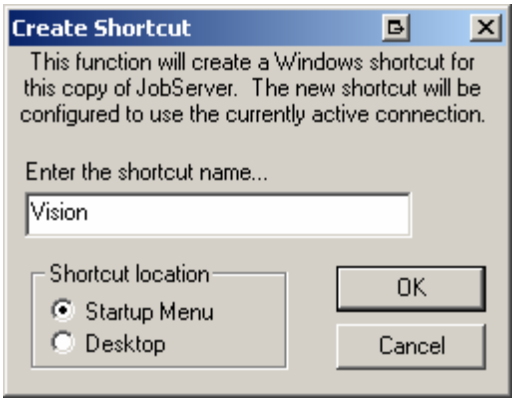
You will notice that the job server icon is now located in the Windows system tray. The job server icon is the icon all the way to the left in the picture below.

HINT: You can create a startup shortcut so that you do not need to manually run the job server program each time you turn on your PC by following the steps below.

1. While the Vision job server is running, right mouse click on the icon in the Windows system tray. This is the black icon above.



2. Click on Create Shortcut.



3. Enter the name of the shortcut and select Startup Menu per the picture above.
4. Click OK.

Now when your PC is started, the Vision job server will start automatically.

Note: A complete listing of all of the features included in the Job Server program can be found by going to Start, Programs, Vision Machine Tools, Help.

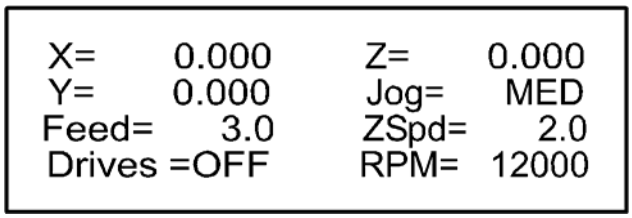
THE CONTROLLER

About the Vision Controller

The Vision controller is the interface between the computer and the engraver. It takes the computer's instructions and tells the engraver what it needs to do to engrave. The controller is the brain of your engraving system; without it, the engraver would not be capable of engraving or routing.

The LCD Screen

When the Vision controller is powered up, the screen will appear.



- The X, Y and Z numbers on the LCD screen show the current position of the spindle. As you use the X, Y or Z jog buttons on the controller, these numbers will change showing the current position of the spindle.
- The Feed number shows the speed that the table will run at while the cutter is in the down position. This number is in inches per second. Pressing the XY Speed up or XY Speed down buttons on the controller will change this number.
- The ZSpd number shows the speed that the spindle will move down into the material at. The number is in inches per second. Pressing the Z Speed up or Z Speed down buttons on the controller will change this number.
- The Drives= shows if the table is powered up. When the display shows OFF, there is no power to the table and you must press the Goto Home button to power it up. When the display shows ON, the table is powered up and ready to go.
- The Jog= shows the speed that the table will move when using the X, Y or Z jog buttons. Pressing the Fast Jog button on the controller will change this speed from Medium to Slow to Fast.
- The RPM shows the speed that the spindle will turn at when the spindle motor is running. Pressing the Spindle RPM up or Spindle RPM down buttons on the controller will change this number.

The Buttons

There are 30 buttons on the front panel of the Vision Controller:

START Button — The light above the Start Button will be off when the controller is ready to have a job sent to it. The light will flash when there is a job ready to be engraved in the controller. Also, the LCD screen will show "Press Start to Go" when a job is ready to be engraved. Pressing the Start Button will begin engraving the job. After the job is completed, pressing the Start button again will run the previous job again.

If a job is ready to engrave, pressing the Exit button will cancel the job from the controller.

The Start button is also used if you need to re-engrave a job starting from a position other then the beginning of the job. After a job has been engraved, press the Start button. The LCD will show:

Press START to Go;
EXIT to Abort.
Z-up to Prox Restart

Press the Z-up jog arrow. Use the X and Y jog keys to move the cutter out near the position that you would like to start engraving from. You can use the Z down arrow to move the spindle closer to the material so you can be more accurate in finding the location. When the spindle is near the location you would like to start engraving from, press the start button. The LCD screen will say Restart Here? Press the Start button and the machine will start engraving from that position.

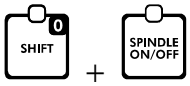
PAUSE Button — When a job is running you can press the Pause Button to temporarily stop the job. You will get a prompt on the LCD screen to either continue or cancel the job. The red light on the pause button will illuminate to show the job is paused. Press the Start Button to resume engraving.

> **TIP:** When a job is in the controller, press the pause button before pressing the start button. This will cause the machine to move to the starting engraving position and pause. You can then use the Z jog buttons to lower the spindle to the material. Next press enter to set the surface.

SET SURFACE Button — This button is used to set the surface of your material. The Set surface Button is only used when the proximity sensor is off. You can use the XY job Buttons to move the cutter out over the material. Use the Z Jog Buttons to bring the cutter to the surface of the material, then press the Set Surface Button. The spindle will lift to the default Z lift height.

SPINDLE ON/OFF Button — This button is used to turn the spindle to the off or automatic position. In the off position, the Spindle On/Off button will be red. The spindle will stay off during engraving. In the automatic position, the Spindle On/Off button will be orange. The spindle will turn on while engraving. When the spindle motor is on during engraving, the Spindle On/Off button will be green.

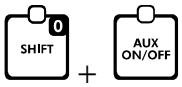
If you press the PAUSE button, the spindle will turn off and re-start when you press start. Always make sure you have the spindle turned to automatic mode when appropriate, otherwise you may run the risk of breaking your cutter.



If you would like to turn the spindle on manually to test, press the Shift button and the light on the shift button will turn on. Then press the Spindle On/Off button. To turn the spindle off, press the Spindle On/Off button again.

AUX ON/OFF Button — This button is used to turn the auxiliary outlet to the off or automatic position. This is typically used to power a vacuum chip removal system. In the off position, the Aux On/Off button will be red. The auxiliary will stay off during engraving. In the automatic position, the Aux On/Off button will be orange. The auxiliary will turn on while engraving. When the auxiliary is on during engraving, the Aux On/Off button will be green.

If you press the PAUSE button, the auxiliary will turn off and re-start when you press start.

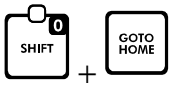


If you would like to turn the auxiliary on manually to test, press the Shift button and the light on the shift button will turn on. Then press the Aux On/Off button. To turn the auxiliary off, press the Aux On/Off button again.

GOTO HOME Button — When the Vision controller is initially turned on, the Goto Home button is used to power up the Vision table and move the spindle to the home position. **IMPORTANT:** Each time the Vision controller is turned on, you must press the Goto Home button first before any engraving or table movement can take place.

After the initial use, the Goto Home button will move the spindle to the current home position.

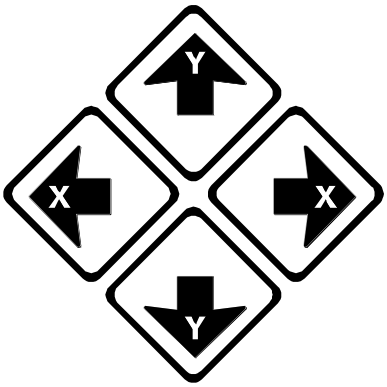
If you need to cancel a job from engraving while it is running, press the Pause button to stop the machine. Next press the Goto Home button to move the spindle back to the home position and cancel out the current job.



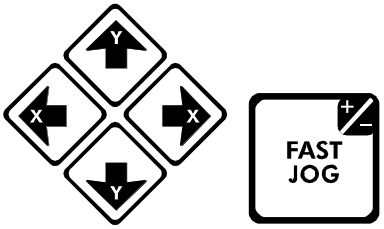
If you would like to move the table to the limit switches, press the Shift button and the light on the shift button will turn on. Then press the Goto Home button and the spindle will move to the limit switches.

SET HOME Button — Use the Jog Buttons to move the spindle to the point you would like to set as an alternative home position. Press the Set Home Button. This is now set as your new home position.
Note: To clear the home position out, press and release the Shift button and then press the Goto Home button. The table will move back to the limit switches. Now press the Set Home button. The previous home position has now been cleared.

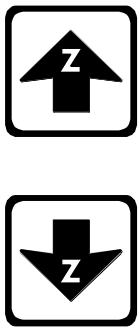
PROX ON/OFF Button — This button turns the proximity sensor on and off. The prox allows the spindle to sense the surface you are engraving is. This feature works when engraving with a nose cone or diamond drag only; it is not designed for non-nosecone engraving or burnishing. When the light is green, the prox is on and when it is red, the prox is off.
Note: Some tables do not support a Proximity Sensor.



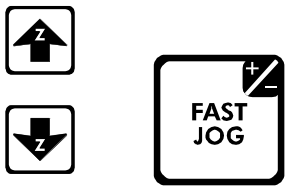
X-Y JOG BUTTONS — Use the XY jog buttons to move the table in the direction of the arrow you press.



HINT: Pressing the Fast Jog button will change the LCD screen Jog=Med to Jog=Slow to Jog=Fast. The speed that the X and Y jog at is determined by this button. Press the Fast Jog button until the LCD shows Jog=Slow to fine tune the jog position.



Z-JOG Buttons — These buttons will move the spindle up and down. They are commonly used for setting the surface of your material when you are not using the prox.



HINT: Pressing the Fast Jog button will change the LCD screen Jog=Med to Jog=Slow to Jog=Fast. The speed that the Z axis jogs at is determined by this button. Press the Fast Jog button until the LCD shows Jog=Slow to fine tune the jog position.

MOVE XY Button — The MOVE XY Button is used to move the spindle to an exact position by entering the position in inches or millimeters. Press the MOVE XY button and then enter the desired coordinates in on the LCD screen using the number pad on the front panel. Then press ENTER. Press ENTER again to have the machine move to that location. Press EXIT to exit out of this mode and then GOTO HOME to move the spindle back to origin position.

4th AXIS Button — This button allows for a rotary axis to be used. When you press this button, you will get a prompt on the LCD screen for the diameter of your item to be engraved. Enter the diameter and press ENTER. **Note:** This button only works when a rotary axis is present on your machine.

JOB TIME BUTTON — The JOB TIME Button is used to display the length of time that the last job took to engrave. At the conclusion of any job, press JOB TIME to get a read-out on your LCD of the amount of time it took to engrave.

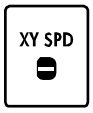
SHIFT Button — The shift button is used in combination with other buttons.

1. Shift and Goto Home button – moves the machine to the home position and checks the limit switches to make sure it is in the correct postion.
2. Shift and Spindle On/Off – turns the spindle motor on. Press the Spindle ON/Off button again to turn the spindle motor off.
3. Shift and Aux ON/Off – turns the auxiliary on. Press the Aux ON/OFF button again to turn the auxiliary off.
4. Shift and Help – shows the firmware version that is loaded into the Vision controller.
5. Shift and Help and Left Jog button – is used to verify that the limit switches and proximity sensor are working properly on the Vision table. A screen will appear when the key combination is pressed. Pressing the X limit switch on the Vision table will change the X0 from 0 to 1. Pressing the Y limit switch on the Vision table will change the Y0 from 0 to 1. Pressing the Z limit switch on the Vision table will change the Z from 0 to 1. Pressing the proximity sensor on the Vision table will change the ZP from 0 to 1 or 1 to 0 depending on the table it is connected to.

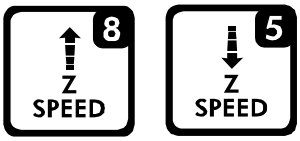
HELP Button — The help button is used to explain what each of the other buttons does. Press the Help button and then release it. Then press any other button on the Vision controller. A description of the button you pressed is displayed on the LCD screen.

Speed Adjustment buttons

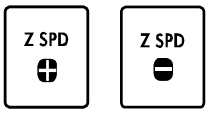
Hand held pendant buttons:



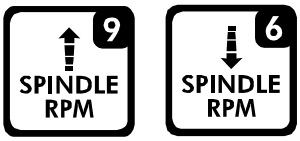
XY SPEED UP and DOWN Buttons — These buttons control how fast the machine will engrave while the cutter is in the down position. You can press these buttons while engraving to adjust the engraving speed faster or slower. The speed set is shown on the LCD screen next to the word FEED. The default is 3.0 which represents an engraving speed of 3 inches per second.



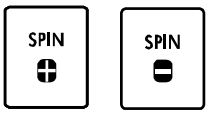
Hand held pendant buttons:



Z SPEED UP and DOWN Buttons — These buttons control how fast the cutter will move down into the material. You can press these buttons while engraving to adjust the Z down speed faster or slower. The speed set is shown on the LCD screen next to the word ZSPD. The default is 2.0 which represents an engraving speed of 2 inches per second.



Hand held pendant buttons:

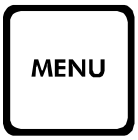


SPINDLE RPM UP and DOWN Buttons — These buttons control how fast the cutter will rotate. You can press these buttons while engraving to cutter RPM faster or slower. The speed set is shown on the LCD screen next to the word RPM. The default is 12000 which represents a spindle RPM of 12000 revolutions per minute. Typically a higher RPM is used for engraving into harder materials and a lower RPM is used for engraving into softer materials.

ENTER — The Enter button is used to accept the information you have typed into the controller. For example, if you are using the Move XY button, you would press the Enter button after you have entered each corrdinate.

EXIT — The Exit button is used to exit out of a menu item on the LCD screen. Press Exit and the controller will back up one menu item for every time the exit button is pressed.

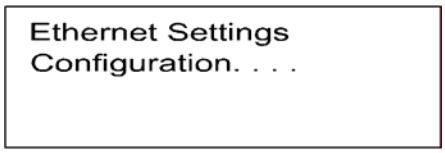
ACCESS JOBS — The Access Jobs button is used to engrave jobs that have been previously have been sent to the Vision machine to be engraved or routed. Press the Access Jobs button and it will show a list of jobs that are stored on your PC's hard drive. Use the Y jog up and down buttons to scroll through the list of jobs on your PC's hard drive. Press Start when you have selected the job you would like to engrave.



MENU — The Menu button is used to access any of the menus on the LCD screen. Pressing the Menu button will show the following choices:

Pressing the Y Down jog button will move to the next screen which will show the following choices:

Pressing the Y Down jog button again will move to the next screen which will show the following choices:



Note: Using the Y jog up and down buttons move the cursor on the LCD screen one item at a time and using the Z jog up and down arrows move the cursor on the LCD screen one page at a time.

Each menu item in the LCD screen will now be explained.

Z Lift Height — This will adjust the distance that the cutter lifts between characters while engraving. Move the cursor to the Z Lift Height using the Y up and down jog buttons and press Enter. Using the number pad on the Vision controller front panel, enter the distance you would like the cutter to lift between characters. This number will be in inches or in millimeters depending on how the controller is configured. It will show the units that are being used on the LCD screen. After the lift distance is entered, press the Enter button on the controller. Press the Exit button to return to the main screen when finished.

Z Cut Depth — This will adjust the depth of engraving or routing you would like. This is the distance from the position that you set as the surface to the final depth you would like to cut. Move the cursor to the Z Cut Depth using the Y up and down jog buttons and press Enter. Using the number pad on the Vision controller front panel, enter the depth you would like to engrave or rout. This number will be in inches or in millimeters depending on how the controller is configured. It will show the units that are being used on the LCD screen. After the Z Cut Depth is entered, press the Enter button on the controller. Press the Exit button to return to the main screen when finished. **Note:** This is only used if you are not setting the depth of cut in the software program used to create the job.

Z Depth Increment — This will adjust the depth of engraving or routing for each pass until the machine reaches the Z Cut Depth above. Some harder materials can not be engraved or routed very deep in one pass and may require multiple passes to reach the desired depth of cut. To do this, enter the total depth required in the Z Cut Depth menu above. Then move the cursor to the Z Depth Increment menu using the Y up and down jog buttons and press Enter. Using the number pad on the Vision controller front panel, enter the depth per pass you would like to achieve. This number will be in inches or in millimeters depending on how the controller is configured. It will show the units that are being used on the LCD screen. After the Z Depth Increment is entered, press the Enter button on the controller. Press the Exit button to return to the main screen when finished. Example: A .1 inch total depth is required but the material to be engraved can only be engraved at .03 at one time. Enter .03 in the Z Depth Increment and press enter. The first pass will cut at .03, the second pass at .06, the third pass at .090 and the fourth pass will engrave at .1. **Note:** This is only used if you are not setting the depth of cut in the software program used to create the job.

Set Dwell Down — This controls how long the spindle will dwell or wait after initially dropping the cutter down into the material before moving in an X/Y direction. This is typically used when engraving into harder materials, allowing the cutter to plunge to the correct depth before starting to engrave or rout. This number is in milliseconds so entering a number of 1000 will allow for a 1 second delay. After the dwell time is entered, press the Enter button on the controller. Press the Exit button to return to the main screen when finished.

Define Preset Home — The Vision controller will allow you to store up to 9 preset home positions. Move the cursor to the Define Preset Home menu using the Y up and down jog buttons and press Enter. On the LCD it will show the number 1 through 9 towards the right side. Use the Z speed up and Z speed down arrows to select the home position you would like to save. Next, use the X and Y jog buttons to move the

spindle to the position that you would like to use as the home position. Once the spindle is at the desired location, press the Enter button to store the home position. **Note:** The home position is stored even after the controller has been powered off.

Load Preset Home — To load a preset home, move the cursor to the Load Preset Home menu using the Y up and down jog buttons and press Enter. Use the Z speed up and Z speed down arrows to select the home position you would like to load. Once the correct offset position is shown on the LCD screen, press the Enter button to load the home position. The machine will now use this position as the home position.

Clear Home — To clear the home position that has been loaded, move the cursor to the Clear Home menu using the Y up and down jog buttons and press Enter. The home position is now defaulted back to the upper left corner of the table.

Cyl Diameter — This menu item is only used when engraving round objects on a machine that supports round item engraving. Move the cursor to the Cyl Diameter using the Y up and down jog buttons and press Enter. Using the number pad on the Vision controller front panel, enter the diameter of the round item to be engraved. This number will be in inches or in millimeters depending on how the controller is configured. Once the diameter has been entered, press the Enter button on the controller. Press the Exit button to return to the main screen when finished.

Ethernet Settings — This menu is used to setup the network settings in the Vision controller. There are two options in the Ethernet Settings menu which are:

1. Specify IP – Pressing the Enter button from this screen will set the Vision controller to automatically retrieve an IP address from the network server it is connected to. Pressing the Exit button from this screen will allow you to enter an IP address for the controller to be set to.
2. Display IP – This menu is used to show the IP address that the Vision controller is set to. It also shows the IP address of the PC that is connected to the Vision controller.

Configuration — This menu is used to configure the Vision controller. There are 10 options in the Configuration menu which are:

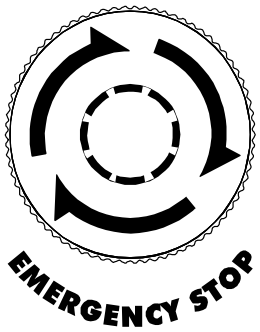
1. Prompt Y Height – When engraving jobs from programs such as CorelDraw©, jobs may engrave upside down on an engraving machine. This is because typically the program used is referencing the home position from the lower left corner of the plate and the engraver or router is referencing the home position from the upper left corner of the plate. To allow for this, the Vision Job Server will flip the job automatically so that the engraving will come out properly. However, when doing this, the Vision controller needs to know the page size that is setup in programs such as CorelDraw©. To accomplish this, the Prompt Y Height configuration setting must be turned on. Move the cursor to the Prompt Y Height menu item using the Y up and down jog buttons and press Enter. Press the X left jog button to select Yes. Press the Enter button on the controller. Press the Exit button two times to return to the main screen when finished.
2. Display Units – This allows the controller to show the units on the LCD in either inches or millimeters. To change between the two, move the cursor to the Display Units menu item using the Y up and down jog buttons and press

Enter. Press the X left jog button to select imperial units or press the X right jog button to select metric units. Press the Enter button on the controller. Press the Exit button two times to return to the main screen when finished.

3. Save Defaults – This is if you would like to change the default settings of the controller when it is turned on. You can save settings such as the Spindle On/Off, Aux On/Off, Prox On/Off, Z lift, Z depth, RPM and surface location. To save the controller defaults, change the settings above to the way that you would like them. Move the cursor to the Save Defaults menu item using the Y up and down jog buttons and press Enter. The LCD will show "Save Settins?". Press Enter. The settings are now saved. Press the Exit button two times to return to the main screen when finished. The next time the Vision controller is turned on, the defaults will be as you set them.
4. Restore Defaults – This is used to restore the defaults in the controller to the original factory set defaults. To restore the controller defaults, move the cursor to the Restore Defaults menu item using the Y up and down jog buttons and press Enter. The LCD will show "Restore to Factory Defaults?". Press Enter. The LCD will now show "Reboot Now?". Press Enter. The controller will reboot and the settings are now restored.
5. Limits Enabled – This is used to make the controller not read the X, Y or Z limit switches on the table. This is typically used only in diagnosing problems that may occur with limit switches on the engraving table. To shut the limit switches off, move the cursor to the Limits Enabled menu item using the Y up and down jog buttons and press Enter. The LCD will show "Limits Enabled". Press Enter. The LCD will now show "Limits Disabled". Press the Exit button two times to return to the main screen when finished. You can turn the limits back on again by pressing Enter from the Limits Disabled menu item.
6. Select Interface – The Vision controller can run from the HPGL machine language and also the GCode machine language. By default the controller uses the HPGL language which is what is used by the Vision and Vision Pro software. If you would like to run directly from the GCode language, move the cursor to the Select Interface menu item using the Y up and down jog buttons and press Enter. Use the X left and right arrows to select the language you would like to use. Press Enter. Press the Exit button two times to return to the main screen when finished.
7. Parking – This is the position that the spindle will move to when the job is finished engraving or routing. Move the cursor to the Parking menu item using the Y up and down jog buttons and press Enter. There are four positions that you can set the spindle to move to at the end of the job. **Datum** – The spindle will move back to the limit switch position on the table after engraving. **None** – The spindle will stay where it is at when the job is finished engraving. **Park** – The spindle will move to a location specified in the Pos After Datum point discussed in the next item. **Home** – The spindle will move to the current home position that is set in the controller. Use the X left and X right jog buttons to select which parking position you would like to

use. Press Enter. The parking position is now set. Press the Exit button two times to return to the main screen when finished.

8. Pos After Datum – This is used to set a location that you would like the spindle to move to after it goes back to the limit switches. Move the cursor to the Parking menu item using the Y up and down jog buttons and press Enter. Using the X and Y jog buttons, move the spindle to the position that you would like the spindle to move to at the end of the job. Press Enter. Press Enter again and the LCD will show "Datum Now". Press Enter and the machine will move back to the original home position. The job will now engrave from the position that was just set and after the job has been run, the spindle will move to this position also. Press the Exit button two times to return to the main screen when finished.
9. Set Dwell Up – This is used only with tables that are using an air actuated Z axis. None of the current Vision systems use an air actuated Z axis. This will allow the Z axis to release the air pressure so that the spindle moves up before moving to the next item to be engraved. Move the cursor to the Set Dwell Up menu item using the Y up and down jog buttons and press Enter. Enter the length of time required for the Z dwell up and then press Enter. This number is in milliseconds so entering a number of 1000 will allow for a 1 second delay. Press the Exit button two times to return to the main screen when finished.
10. Run Self Test – This is used to engrave a self test job that is programmed into the controller. Move the cursor to the Run Self Test menu item using the Y up and down jog buttons and press Enter. The LCD will show "Run Self-Test?". Press Enter. The LCD will now show "Press Start to Go". Press the Start button and the test job will engrave.



Emergency Stop Button — This button will stop engraving immediately leaving the cutter in the down position and will power off the X, Y and Z stepper motors and also shut off the spindle motor and auxiliary. Once you have pushed the Emergency Stop Button, you must twist the knob clockwise to release it. Press the Goto Home Button to power up the table and have it move back to the home position.

OPERATIONS

Setting the surface & lift of the spindle

NOTE: There are different procedures for different types of engraving.

Diamond drag engraving with a proximity sensor

Make sure that the proximity sensor is turned on. When you run the job, the spindle will go down until it touches the material and finds the surface automatically. If you want to change the lift amount of the cutter between characters, you will need to do the following steps:

1. Press the menu button on the controller. **Note:** If you are in the middle of engraving a job, press the pause button before pressing the menu button.
2. Use the Y jog up and down buttons to select Z Lift Height and press Enter.
3. Enter the lift height using the number pad on the Vision controller and press Enter.
4. The Z lift height is now set. Press Start to run the job or resume engraving.

Diamond Drag and nose cone engraving without a proximity sensor

1. Send a job to the Vision controller.
2. With the prox off, press the Pause button and then press Start.
3. The machine will move to the start of the engraving and pause.
4. Use the Z jog down button to lower the spindle to material.
5. Press the Enter button. The machine will start to engrave using the surface point that was just set.

Non-nose cone engraving (depth control)

1. Send a job to the Vision controller.
2. Make sure that the spindle is locked by tightening the spring adjustment knob all the way down.
3. Make sure that you have entered a depth of cut in the Vision or Vision Pro software. If you are using a different program then Vision or Vision Pro, use the Menu button on the controller to select and enter the Z Cut Depth.
4. With the prox off, press the Pause button and then press Start.
5. The machine will move to the start of the engraving and pause.
6. Use the Z jog down button to lower the spindle to material. Make sure that the cutter is just barely touching the surface.
7. Press the Enter button. The machine will start to engrave using the depththat was entered in the software or the controller.

Burnishing

1. Send a job to the Vision controller.
2. Make sure you are using a burnishing adaptor on the burnishing cutter.
3. With the prox off, press the Pause button and then press Start.
4. The machine will move to the start of the engraving and pause.
5. Use the Z jog down button to lower the spindle to material. Once the cutter reaches the material, press the Z jog down button a small amount more.
6. Press the Enter button. The machine will start to burnish.

Setting a temporary Offset

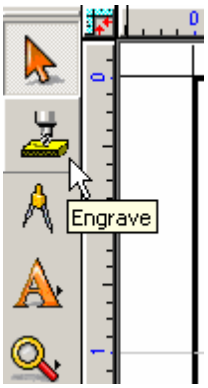
To set a temporary offset, use the X and Y jog buttons to move the spindle to the location you would like to start engraving from. Once at the correct position, press the Set Home button on the controller. Jobs will now be engraved from that location.
Note: To clear this offset, press the goto home button and then press the set home button.

SENDING JOBS TO THE VISION MACHINE

Sending jobs from the Vision Pro software

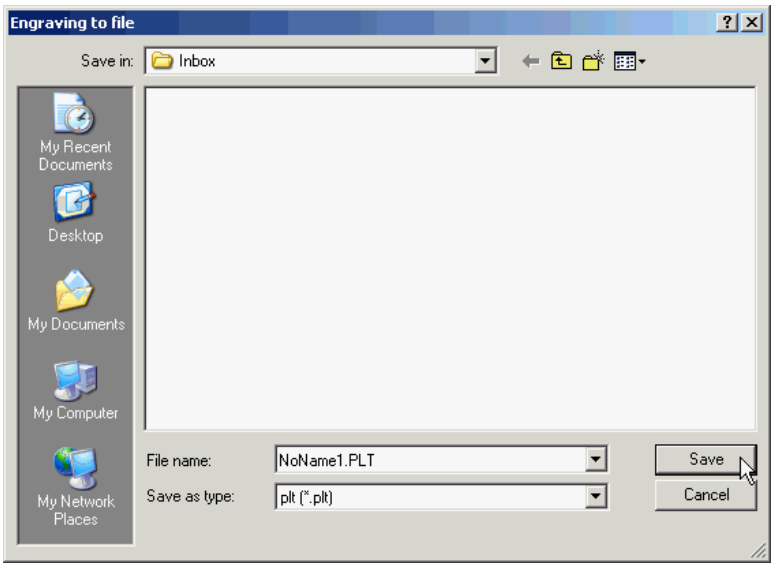
To send a job from the Vision Pro software to the Vision controller, follow the steps below.

1. Make sure that the Job Server program is running. To do this, go to Start, Programs, Vision Machine Tools, Job Server.
2. Go into the Vision Pro software and create a job as described in the Vision Pro software manual.
3. In the Vision Pro software, click on the Engrave icon shown below.



4. The Cut Toolbox will appear. Select the Engrave icon shown below.

5. The Engrave to File window will appear.



6. If the job has been saved, the job name will appear in the File name box. If it has not been saved, it will show NoName1.plt. Click on Save.

   You can change the name of the file or click OK to send the job to the Vision controller. **Note:** The name that is entered will show up on the controller LCD screen if you would like to re-engrave the file.

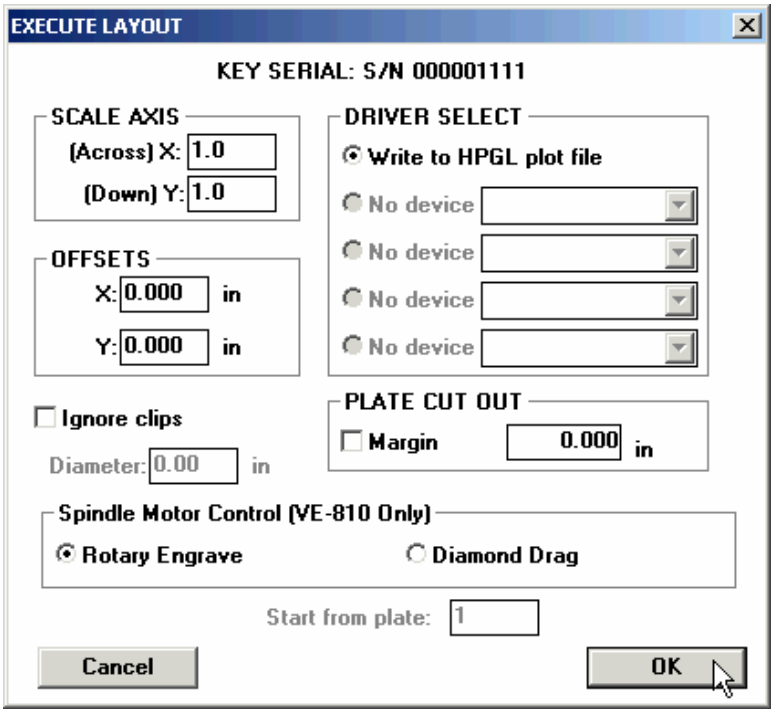
   IMPORTANT: The folder name shown in the Save Layout screen above must match the folder name where the Job Server is configured to look for jobs in.

7. The job has now been sent to the Vision machine.

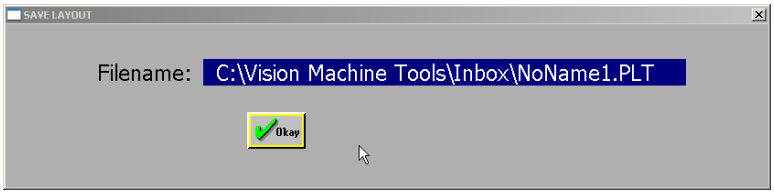
Sending jobs from the Vision software

To send a job from the Vision software to the Vision controller, follow the steps below.

1. Make sure that the Job Server program is running. To do this, go to Start, Programs, Vision Machine Tools, Job Server.
2. Go into the Vision software and create a job as described in the Vision software manual.
3. In the Vision software, go to the File menu and then Engrave (F9 is the shortcut for this).
4. The Execute Layout screen will appear.



5. Select OK.
6. The Save Layout screen will appear.



7. You can change the name of the file or click OK to send the job to the Vision controller. **Note:** The name that is entered will show up on the controller LCD screen if you would like to re-engrave the file.

IMPORTANT: The folder name shown in the Save Layout screen above must match the folder name where the Job Server is configured to look for jobs in.

8. The file has now been sent to the Vision machine.

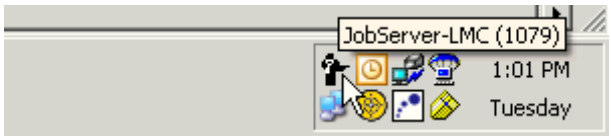
Sending jobs from Corel Draw©

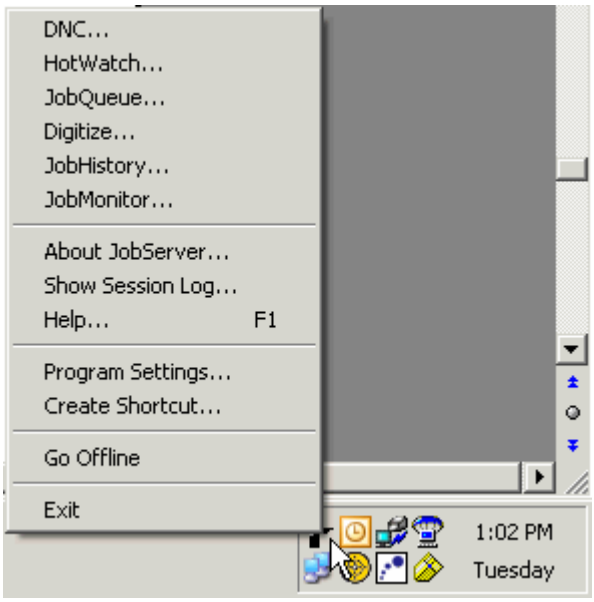
To send a job from the Vision software to the Vision controller, follow the steps below. There are different versions of Corel Draw©, but the steps are the same for each version.

1. Make sure that the Job Server program is running. To do this, go to Start, Programs, Vision Machine Tools, Job Server.

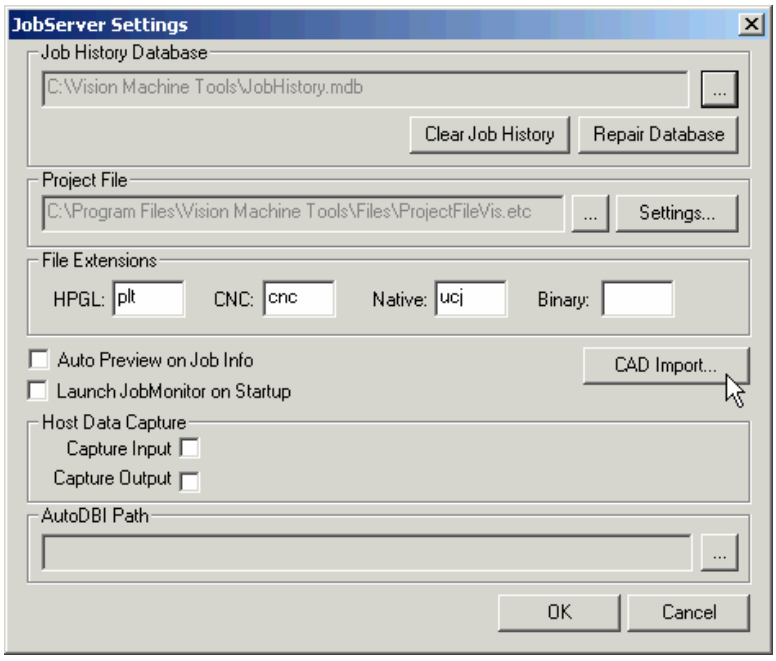
2. When running from Corel Draw©, you must make a couple of configuration changes to have the file engrave properly. The steps below need to be followed the first time you run from Corel Draw©.

   a. Right mouse click on the Job Server in the Windows System Tray at the lower right corner of the screen.

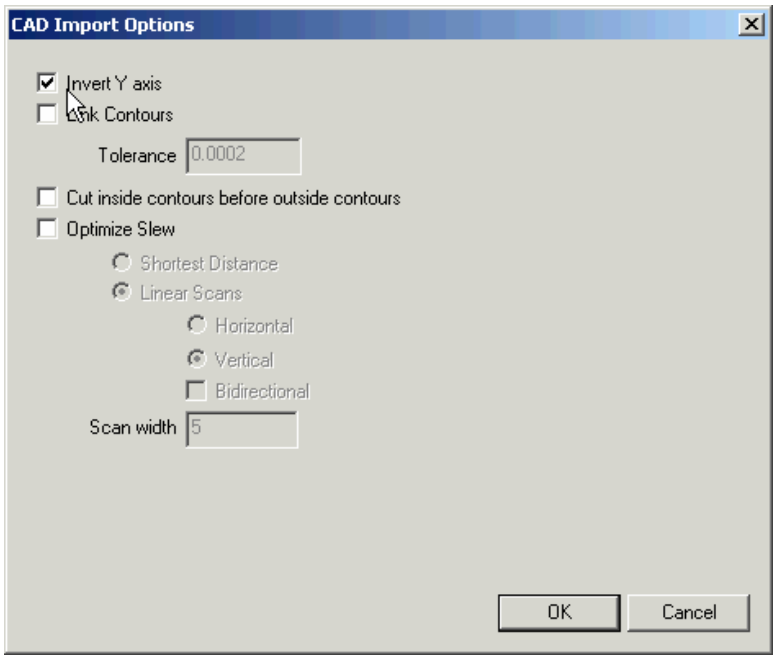




   b. Go to Program Settings and click on CAD Import.



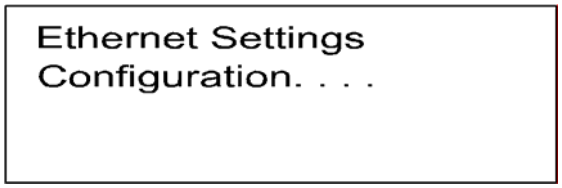
c. Select Invert Y axis from the CAD Import Options screen.



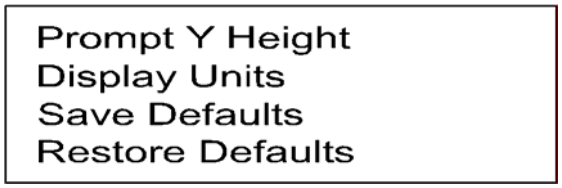
d. Click OK on the CAD Import Options screen and the click OK on the Job Server settings screen.

e. On the Vision controller, press the Menu button.

f. Press the Z down jog button two times. Then press the Y down jog button one time to highlight the Configuration…. Menu. Then press the Enter button on the controller.



g. Press the Y up or down button to select the Prompt Y Height menu item and press Enter.

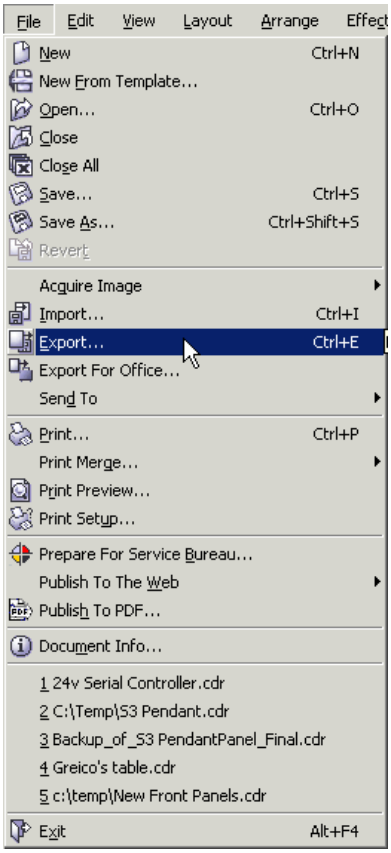


h. Press the X left jog button to select YES and press Enter.

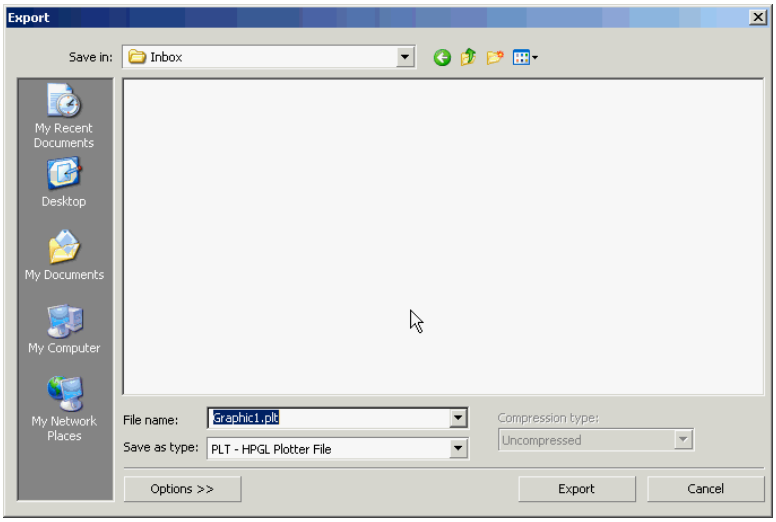
i. Press the Exit button two times to return to the main screen.

3. Go into the Corel Draw© software and create a job.

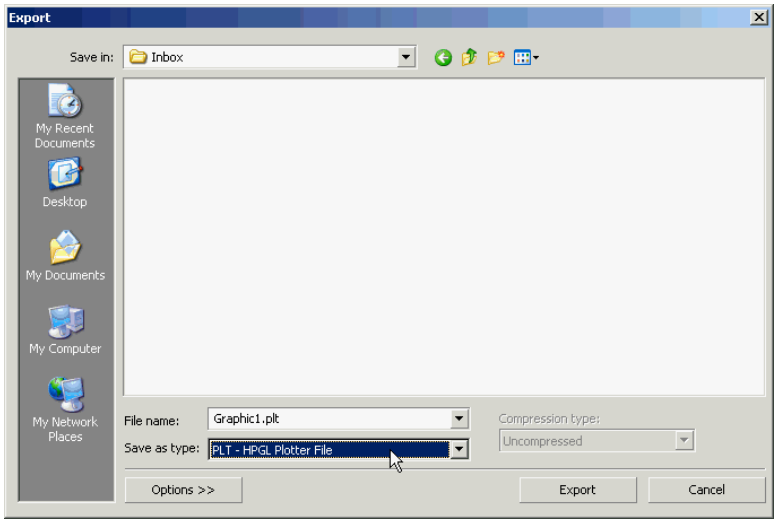
4. Go to the File, Export menu in Corel Draw©.



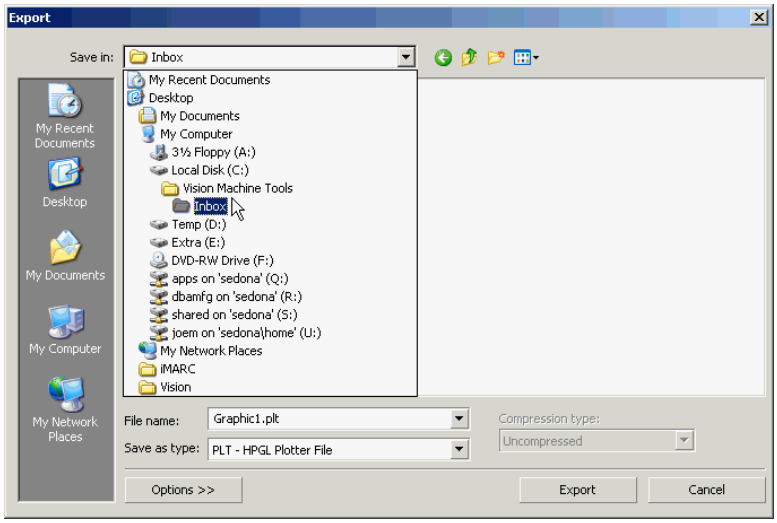
5. The Export windows will appear.



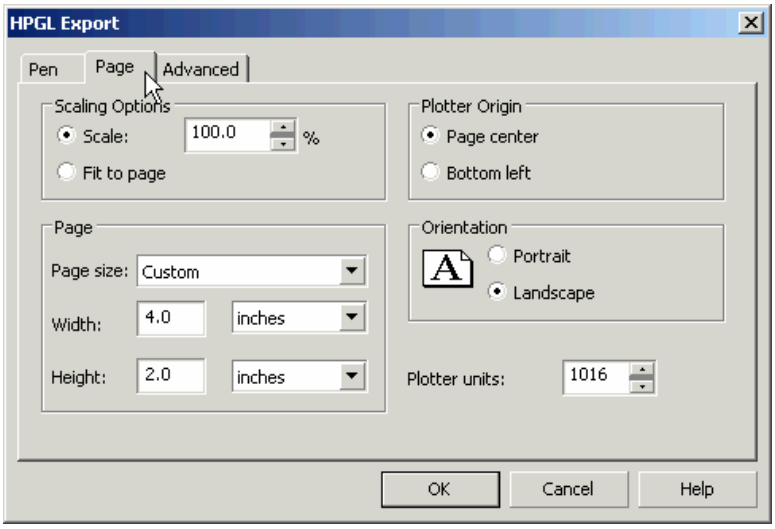
6. Select the PLT – HPGL Plotter File type under the Save as type: section of the screen.



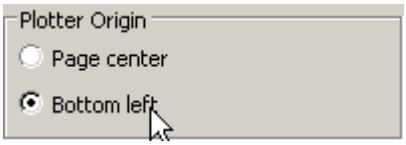
7. Make sure that the Save in: folder on the Export screen is showing the default Job Server folder. This folder is typically c:\Vision Machine Tools\Inbox.



8. Click on Export and select the Page tab.

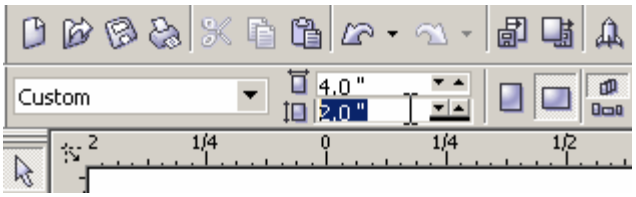


9. Change the Plotter Origin from Page Center to Bottom Left. **Note:** This setting will be retained after it is changed once.



10. Click OK. The file has now been sent to the Vision machine.
11. The LCD screen on the Vision controller will show:

12. Enter the page size height that you setup in Corel Draw©. You can look at the Corel Draw© screen below to determine the height of the plate.



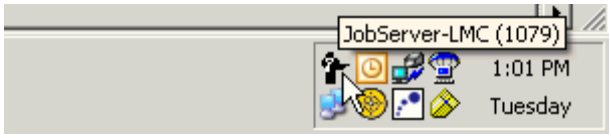
13. Enter that number into the Vision controller and press Enter.
14. Press Start and the job will engrave.

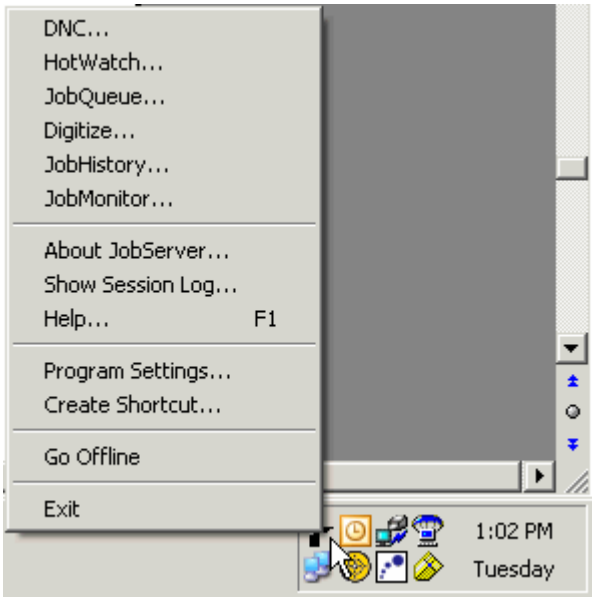
Sending jobs from other programs

The Vision controller will accept most standard HPGL and standard GCode files. The controller and Job Server need to be setup to run these files directly one time. After

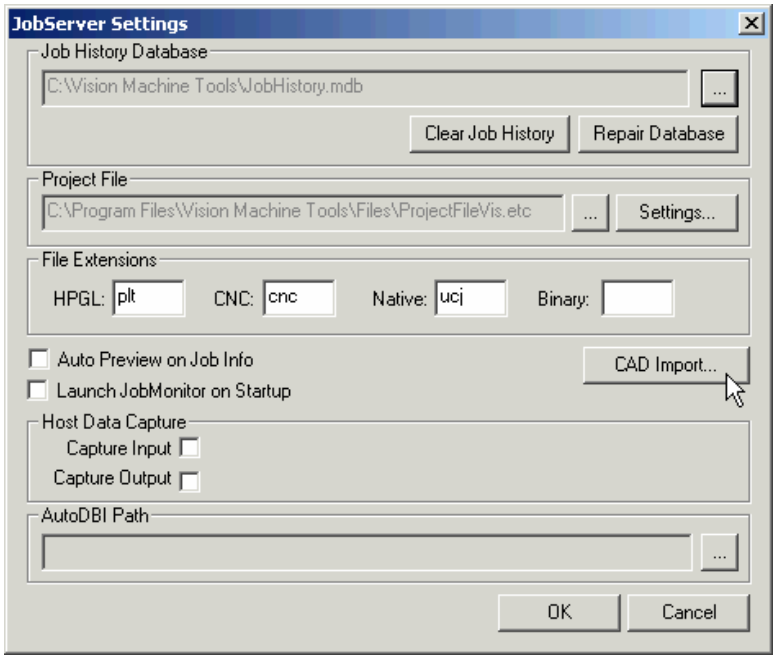
that, you do not need to setup these parameters again. The steps to configure the machine are as follows:

1. Make sure that the Job Server program is running. To do this, go to Start, Programs, Vision Machine Tools, Job Server.
2. Right mouse click on the Job Server in the Windows System Tray at the lower right corner of the screen.

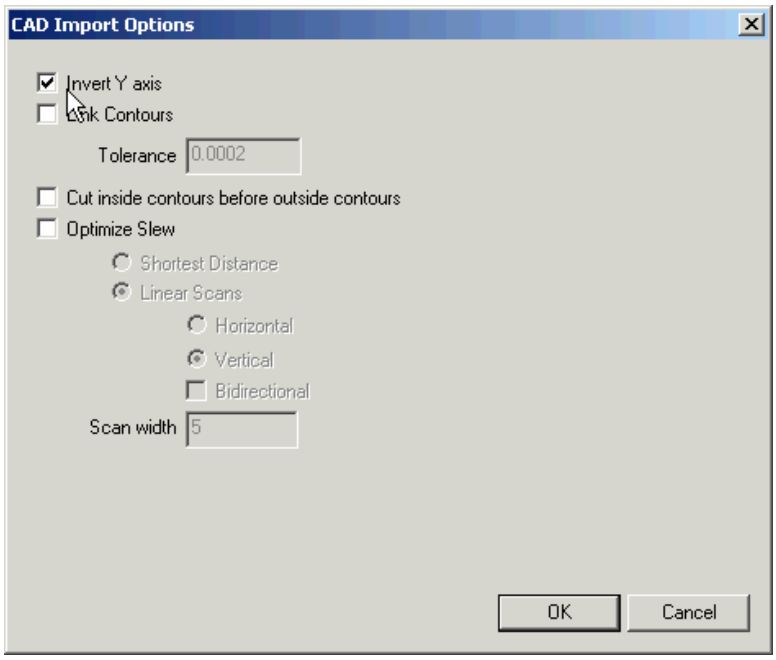




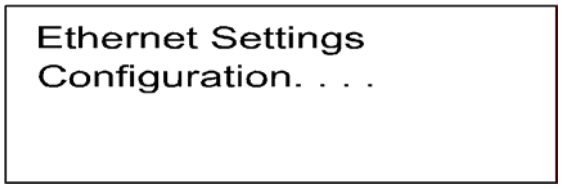
3. Go to Program Settings and click on CAD Import.



4. Select Invert Y axis from the CAD Import Options screen.

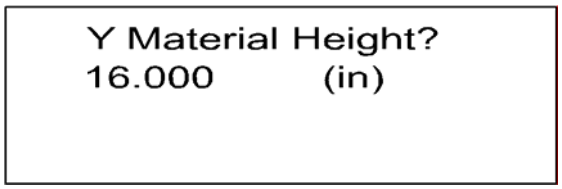


5. Click OK on the CAD Import Options screen and the click OK on the Job Server settings screen.
6. On the Vision controller, press the Menu button.
7. Press the Z down jog button two times. Then press the Y down jog button one time to highlight the Configuration…. Menu. Then press the Enter button on the controller.



8. Press the Y up or down button to select the Prompt Y Height menu item and press Enter.

9. Press the X left jog button to select YES and press Enter.
10. Press the Exit button two times to return to the main screen.
11. Go into the program you are using and create a job.
12. Typically, you can go to the File, Export menu in the program you are using. If not, check the programs user guide to see if and how to create an HPGL or GCode file.
13. Export the file. Make sure to export the file to the default Job Server folder which is typically c:\Vision Machine Tools\Inbox. You must use a .PLT or .CNC extension on the file.
14. The file should now have been sent to the Vision machine.
15. The LCD screen on the Vision controller will show:



16. Enter the page size height that you setup in your program and press Enter.
17. Press Start and the job will engrave.

TROUBLESHOOTING

Troubleshooting Chart

Before calling an authorized service center, please check this trouble shooting chart. Many of the problems that can occur are easily corrected without the need of a technician.

Issue: The LCD screen shows "Drives Not Enabled!"

Possible Resolutions:

1. Press the Goto Home button. The LCD should now show Drives=ON
2. Make sure the large Stop button is out. Rotate the Stop button clockwise to see if it pops out.
3. Make sure the cable between the Vision engraving table and the Vision controller are connected.
4. The table cable is bad.

Issue: No table movement – LCD shows "Finding Z Limit" motion

Resolution:

Check the fuse labeled "DC Fuse" on the back of the controller. Replace fuse if necessary.

Issue: The lights on the front panel are all off and the LCD screen is off.

Resolution:

Check the fuse labeled "AC Fuse" on the back of the controller. Replace fuse if necessary.

Issue: The machine engraves jobs upside down

Resolution:

Right Mouse click on the Job Server icon in the Windows© system tray. Go to Program Settings. Click on CAD Import. If the Invert Y axis has a check by it, un-check it and if the Invert Y axis does not have a check by it, check it. Then click OK and then OK.

Issue: The machine stops engraving in the middle of a job when running from Vision Pro.

Resolution:

Make sure you are using the Vision Series 3 controller driver. In Vision Pro go to the Engrave, Engraver Defaults menu. The name of the selected driver should contain the word "Series 3" in it.

Vision Pro 7: Go to File, Install Cutting Devices in Vision Pro 7 and make sure you select Series 3 controller drivers and select the correct table size.

Vision Pro 6: Make sure you are using the latest version of Vision Pro 6 which can be downloaded at www.visionengravers.com/downloads/vpro6.zip. With the latest version installed, go to File, Install Drivers in Vision Pro 6 and make sure you select Series 3 controller drivers and select the correct table size.

Vision Pro 5: Acquire the Series 3 controller driver from Vision by emailing service@visionengravers.com. Copy the driver file into the VPro5 folder. Go into Vision Pro 5 and go to Help, About Vision Pro. Hold the <alt> key down and press the letter i. Notepad will come up with the signlab.ini file.

Go to Edit, Find, then type in "Plotter" and click on Find. It will look like:

```
[PlotterSetup]
usecab=1
DeviceUsed=0
NumberDevices=0
Plotter1=
Plotter2=
```

Add one to the number of devices and then make it look like:

```
[PlotterSetup]
usecab=1
DeviceUsed=0
NumberDevices=1
Plotter1=V1212
Plotter2=
```

If V1212 (for example) is the new driver name, then go to File->Save. Now, the driver should be visible for selection in Vision Pro at the Engrave->Engraver Setup menu option.

Issue: The LCD screen shows "Host Not Responding"

Resolution:

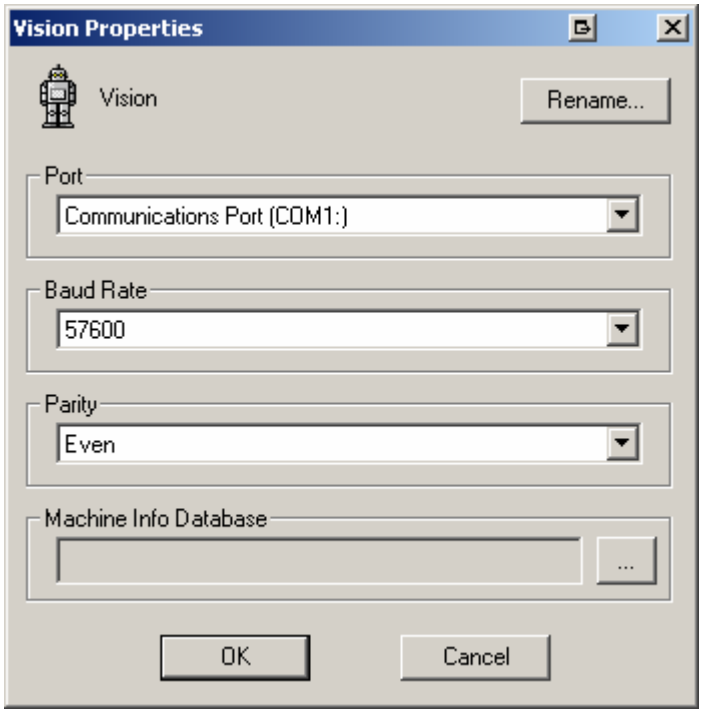
Start the Job Server by going to Start, Programs, Vision Machine Tools, Job Server.

Issue: When using a serial connection and Job Server, the Job Server does not connect.

Resolution:

Make sure that the when the machine connection is added from the Machine Connections screen that you click on Properties per the picture below.

The settings should be per the picture below.



Issue: Pressing the Access Jobs button shows many jobs that are not needed.

Possible Resolution:

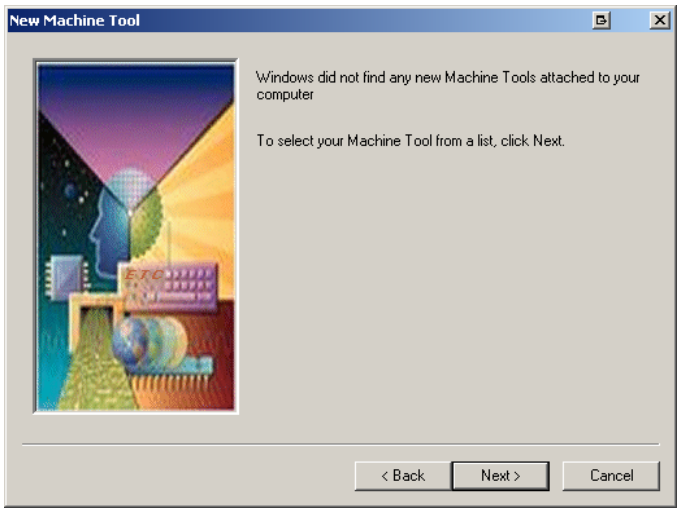
Go to My Computer. Then go to Local Disk C:\Vision Machine Tools\Outbox. Select and delete the files that are no longer needed.

Issue: LCD shows "Limits Still Active"

Possible Resolution:

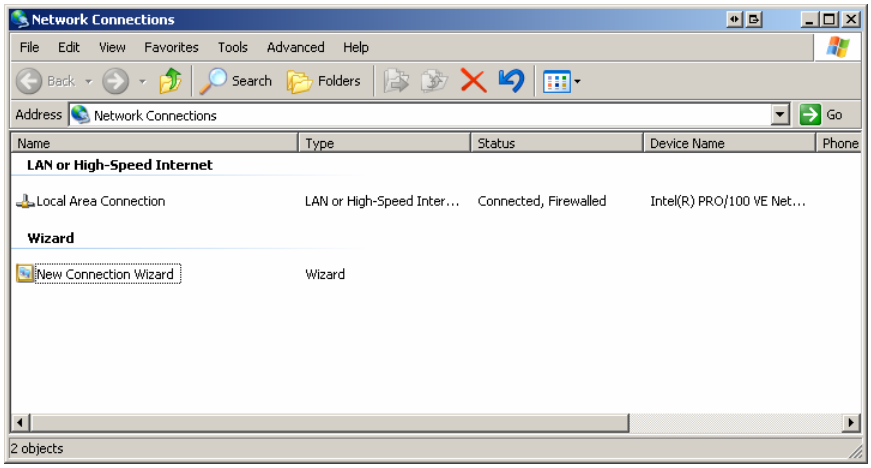
Press the Shift button on the Vision Controller and then release it. Next press the "Goto Home" button. The machine will home itself and the error will clear.

Issue: When trying to add a Vision machine in the Machine Tool Properties, a machine is not found and the error below is shown.

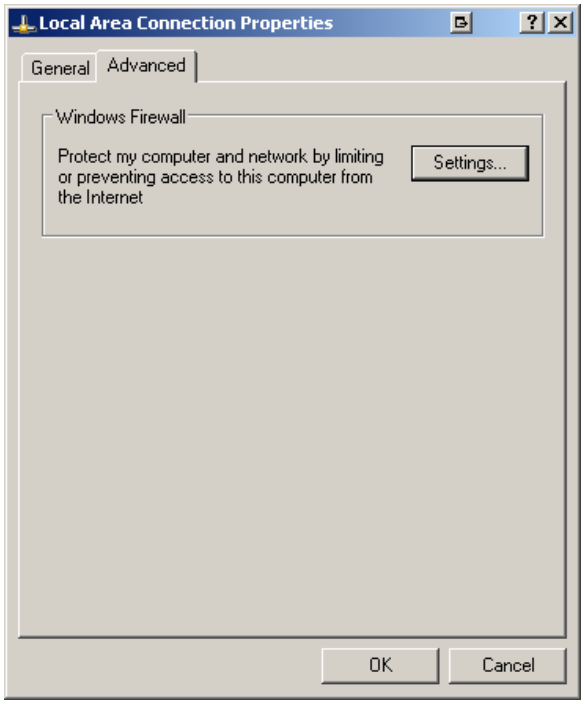


Possible Resolution:

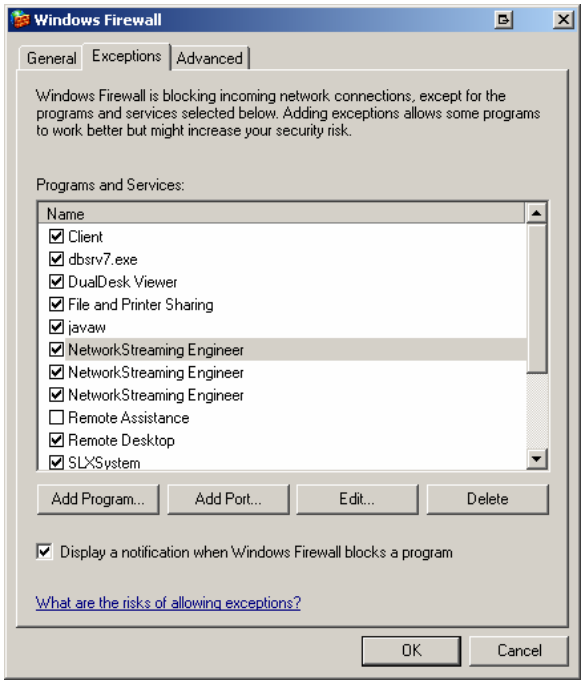
Right mouse click on My Network Properties and go to Properties. The screen below will be shown.



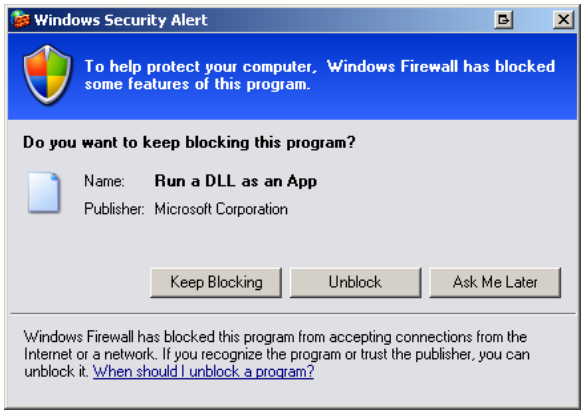
Right mouse click on Local Area Connection and go to Properties. Click on the Advanced tab and click on Settings per the picture below.



Click on the Exceptions tab per the picture below.

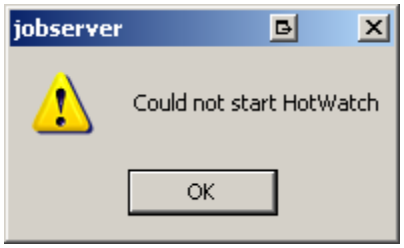


Make sure you put a check mark next to “Display a notification when Windows Firewall blocks a program”. Click OK two times. Now try to add a new machine tool from the Machine Tool Properties screen. When you click Add, the screen below will appear.



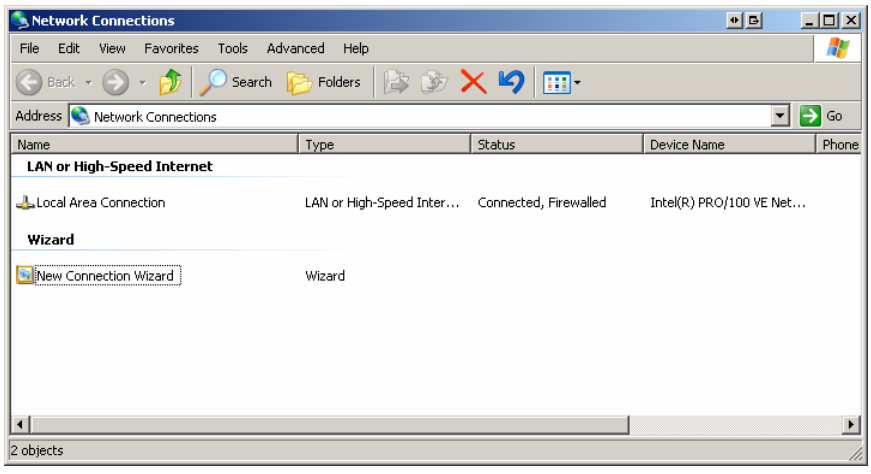
Click Unblock. Then click the Back button and click Next again and the Vision machine should now be shown. Click Finish and then Close.

Issue: When trying to run Job Server, the following error appears.

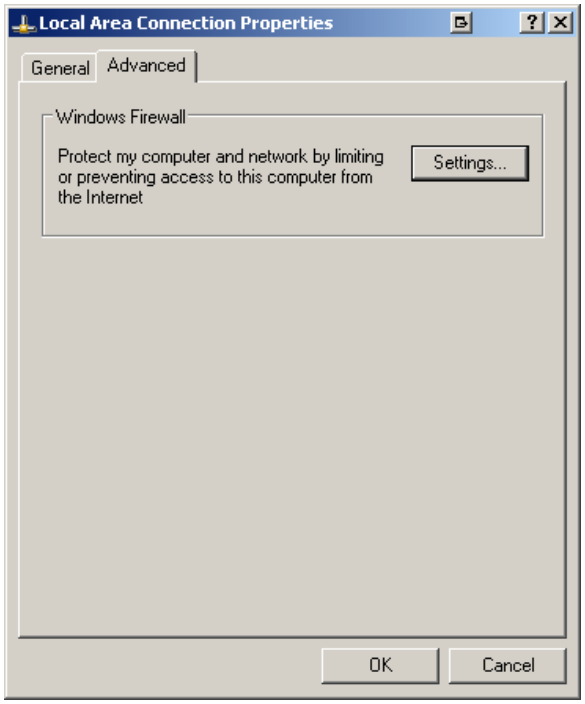


Possible Resolution:

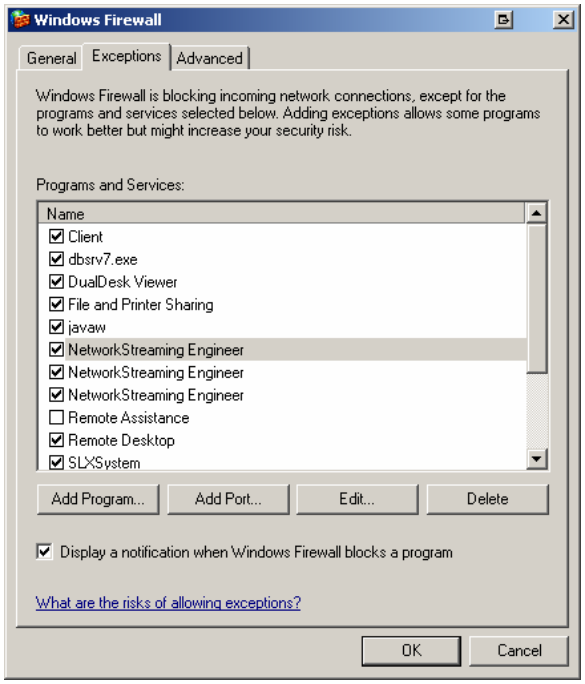
Right mouse click on My Network Properties and go to Properties. The screen below will be shown.



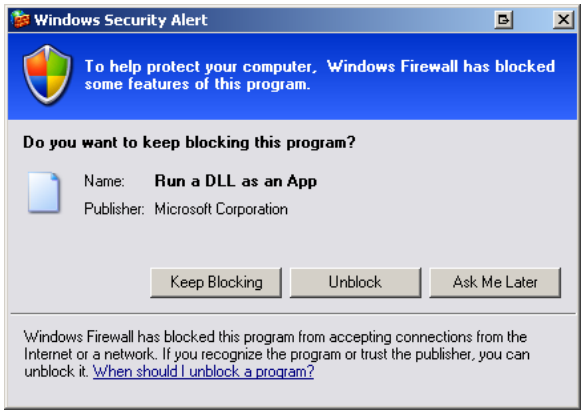
Right mouse click on Local Area Connection and go to Properties. Click on the Advanced tab and click on Settings per the picture below.



Click on the Exceptions tab per the picture below.



Make sure you put a check mark next to “Display a notification when Windows Firewall blocks a program”. Click OK two times. Now run Job Server. The screen below will appear.

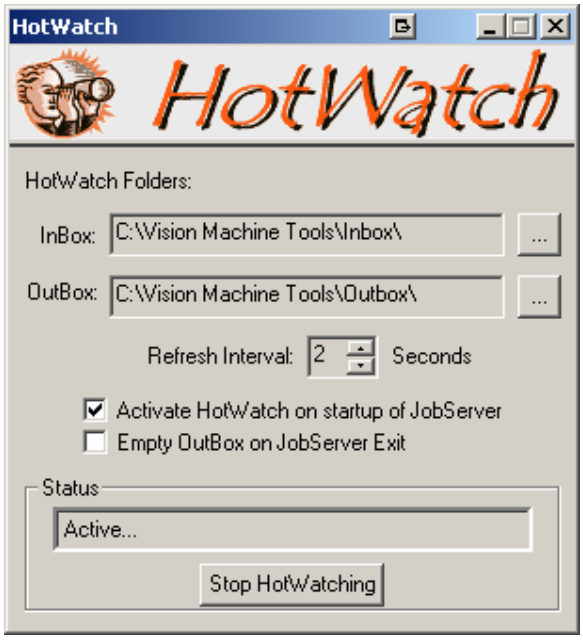


Click Unblock. Then click OK and then Close. Right mouse click on the Job Server icon in the lower right corner of the screen and select Exit. Click OK when it asks "Are you sure you wish to shutdown?". Run Job Server again and it should connect to the Vision machine.

Issue: You would like to move the folder location for the Inbox and Outbox.

Resolution:

With the Job Server running, right mouse click on the Job Server icon in the lower right corner of the screen in Windows. Left click on HotWatch. The screen below will be shown:

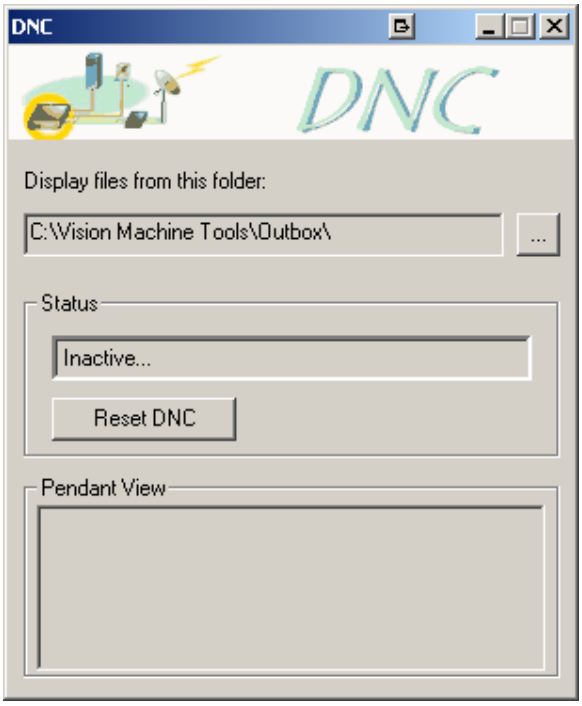


Click on the three dots to the right of the folder names for the Inbox and Outbox and select the folder that you would like to use.

Issue: You would like to move the folder location on the computer where the jobs shown in the Access Jobs button are located.

Resolution:

1. With the Job Server running, right mouse click on the Job Server icon in the lower right corner of the screen in Windows. Left click on DNC. The screen below will be shown:



Click on the three dots to the right of the folder name and select the folder that you would like to use.

MAINTENANCE

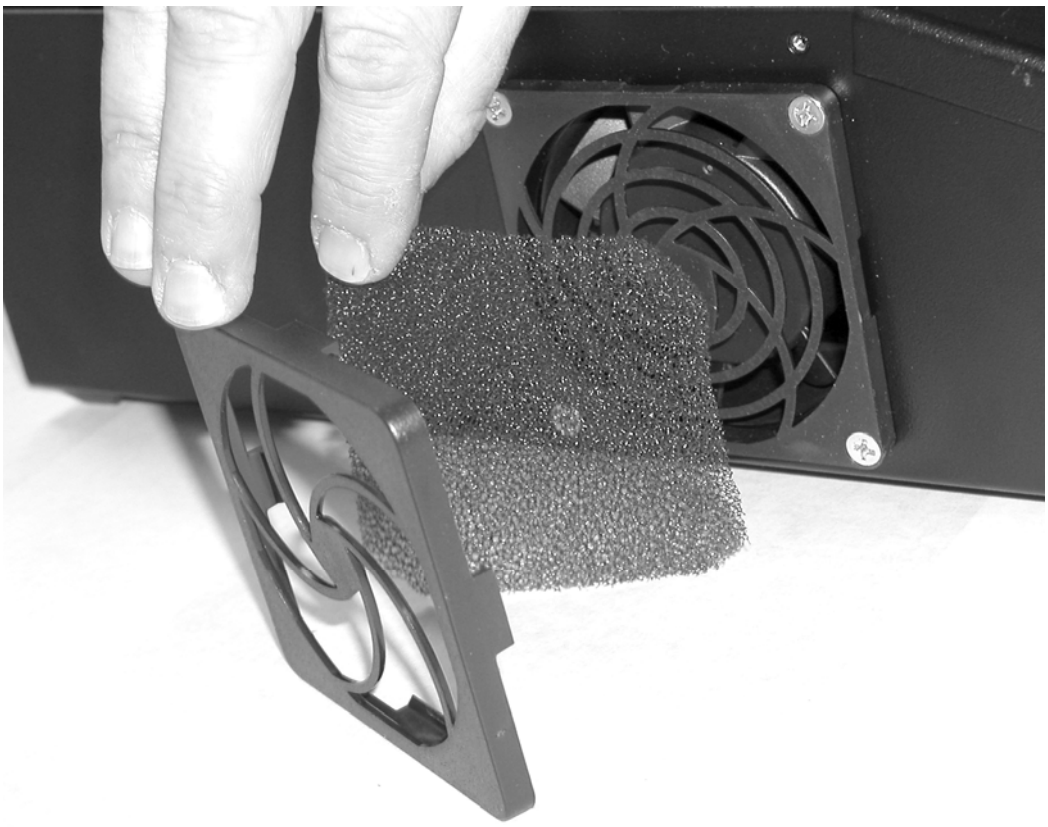
How to Remove and Clean the Air Filter

Weekly preventive maintenance should be performed to ensure reliable operation of your controller. It is recommended that the input fan filter be removed weekly and cleaned to ensure proper cooling of the control electronics.

1. Remove the filter guard; this is easiest if you pull from a corner of the guard.

2. Remove the filter and blow out the filter with low pressure compressed air or rinse the filter with water and dry before replacing.

3. Replace the filter and replace the filter guard.



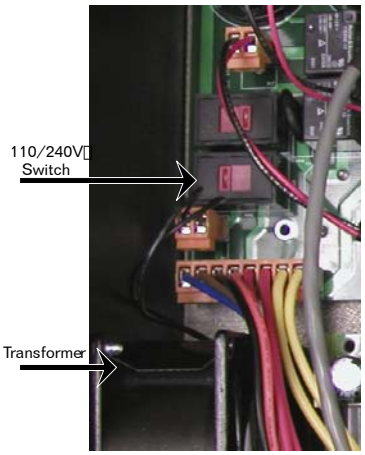
HOW TO CHANGE THE POWER INPUT

from 110 volts to 220 volts or 220 volts to 110 volts.

1. Unplug the power cable going into Vision controller.
2. Remove the top cover of the controller by removing the 3 Philips screws on the top, 1 on the back and 2 on each side.
3. Move the switch shown below to the position closest to the outside of the case (left position looking from the front) for 110 volts and move the switch to the inside position (right position looking from the front) for 220 volts.

Voltage Switch Location

(Inside Machine)



4. Put the top cover back on the Vision controller and replace all the screws.
5. The controller is now configured for the power input that you have set.

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